

WTC TRADE CENTER

TITLE

DRAWING BOOK 4

DATE

REVISIONS

WTCI-17-LERA

4 - A1 -

Panel Schedules - Tower A

4 - B1 -

Panel Schedules - Tower B

4 - AB2 -

Panel Details Tower A &amp; B

(See 4-AB2-1 for index)

4 - AB3 -

Schedules and Details

Floor 110 to 107

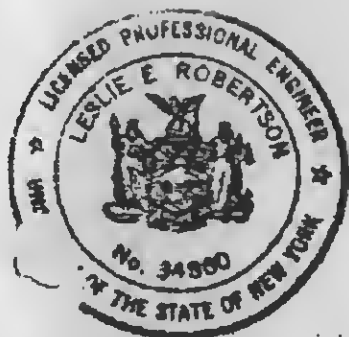
(See 4-AB3-1 for index)

NOTE: See 4-ABO-0 for latest  
date for each page

## SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

## Structural &amp; Civil Engineers

PROJECT	THE WORLD TRADE CENTER	TITLE	EXTERIOR WALL - PANEL SCHEDULES AND DETAILS	DATE	10/ 6/72
REVISIONS					
PRINTED 5/18/73					
4-ABO- 0	5/18/73	4-A1 -209	12/ 5/67	4-A1 -380	6/ 5/67
4-ABO- 0	5/18/73	4-A1 -210	6/ 5/67	4-A1 -381	12/ 5/67
4-AB1- 1		4-A1 -211	6/ 5/67	4-A1 -382	6/ 5/67
4-A1 - 2		4-A1 -212	12/ 5/67	4-A1 -383	12/ 5/67
THRU		4-A1 -213	6/ 5/67	4-A1 -384	6/ 5/67
4-A1 -165		4-A1 -214	12/ 5/67	4-A1 -385	6/ 5/67
INCL.	6/ 5/67	4-A1 -215		4-A1 -386	12/ 5/67
4-A1 -166	12/ 5/67	THRU		4-A1 -387	6/ 5/67
4-A1 -167	12/ 5/67	4-A1 -339		4-A1 -388	12/ 5/67
4-A1 -168	12/ 5/67	INCL	6/ 5/67	4-A1 -389	
4-A1 -169	12/ 5/67	4-A1 -340	12/ 5/67	THRU	
4-A1 -170	12/ 5/67	4-A1 -341	12/ 5/67	4-A1 -484	
4-A1 -171	12/ 5/67	4-A1 -342	12/ 5/67	INCL	6/ 5/67
4-A1 -172	12/ 5/67	4-A1 -343	12/ 5/67	4-A1 -485	7/18/69
4-A1 -173	12/ 5/67	4-A1 -344	12/ 5/67	4-A1 -486	7/18/69
4-A1 -174	6/ 5/67	4-A1 -345	12/ 5/67	4-A1 -487	7/18/69
4-A1 -175	6/ 5/67	4-A1 -346	12/ 5/67	4-A1 -488	7/18/69
4-A1 -176	12/ 5/67	4-A1 -347	12/ 5/67	4-A1 -489	6/ 5/67
4-A1 -177	12/ 5/67	4-A1 -348	6/ 5/67	4-A1 -490	7/18/69
4-A1 -178	6/ 5/67	4-A1 -349	6/ 5/67	4-A1 -491	7/18/69
4-A1 -179	12/ 5/67	4-A1 -350	6/ 5/67	4-A1 -492	7/18/69
4-A1 -180	6/ 5/67	4-A1 -351	12/ 5/67	4-A1 -493	7/18/69
4-A1 -181	12/ 5/67	4-A1 -352	6/ 5/67	4-A1 -494	6/ 5/67
4-A1 -182	12/ 5/67	4-A1 -353	12/ 5/67	4-A1 -495	
4-A1 -183	6/ 5/67	4-A1 -354	6/ 5/67	THRU	
4-A1 -184	12/ 5/67	4-A1 -355	6/ 5/67	4-A1 -502	
4-A1 -185	6/ 5/67	4-A1 -356	12/ 5/67	INCL.	11/10/69
4-A1 -186	12/ 5/67	4-A1 -357	6/ 5/67	4-A1 -503	11/10/69
4-A1 -187	12/ 5/67	4-A1 -358	12/ 5/67	4-A1 -504	11/10/69
4-A1 -188	6/ 5/67	4-A1 -359	6/ 5/67	4-A1 -505	11/10/69
4-A1 -189	12/ 5/67	4-A1 -360	6/ 5/67	4-A1 -506	11/10/69
4-A1 -190	6/ 5/67	4-A1 -361	12/ 5/67	4-A1 -507	11/10/69
4-A1 -191	6/ 5/67	4-A1 -362	6/ 5/67	4-A1 -508	11/10/69
4-A1 -192	12/ 5/67	4-A1 -363	12/ 5/67		
4-A1 -193	6/ 5/67	4-A1 -364	6/ 5/67	4-B1 - 2	
4-A1 -194	12/ 5/67	4-A1 -365	6/ 5/67	THRU	
4-A1 -195	6/ 5/67	4-A1 -366	12/ 5/67	4-B1 - 7	
4-A1 -196	6/ 5/67	4-A1 -367	6/ 5/67	INCL.	10/18/68
4-A1 -197	12/ 5/67	4-A1 -368	12/ 5/67	4-B1 - 8	3/12/69
4-A1 -198	6/ 5/67	4-A1 -369	6/ 5/67	4-B1 - 9	10/18/68
4-A1 -199	12/ 5/67	4-A1 -370	6/ 5/67	4-B1 - 10	3/12/69
4-A1 -200	6/ 5/67	4-A1 -371	12/ 5/67	4-B1 - 11	
4-A1 -201	6/ 5/67	4-A1 -372	6/ 5/67	THRU	
4-A1 -202	12/ 5/67	4-A1 -373	12/ 5/67	4-B1 - 22	
4-A1 -203	6/ 5/67	4-A1 -374	6/ 5/67	INCL.	10/18/68
4-A1 -204	12/ 5/67	4-A1 -375	6/ 5/67	4-B1 - 23	3/12/69
4-A1 -205	6/ 5/67	4-A1 -376	12/ 5/67	4-B1 - 24	10/18/68
4-A1 -206	6/ 5/67	4-A1 -377	6/ 5/67	4-B1 - 25	3/12/69
4-A1 -207	12/ 5/67	4-A1 -378	12/ 5/67	4-B1 - 26	
4-A1 -208	6/ 5/67	4-A1 -379	6/ 5/67	THRU	
				4-B1 - 30	
				INCL.	10/18/68
				4-B1 - 31	
				THRU	
				4-B1 -164	
				INCL.	6/21/67
				4-B1 -165	5/14/69
				4-B1 -166	12/ 5/67
				4-B1 -167	12/ 5/67
				4-B1 -168	12/ 5/67
				4-B1 -169	12/ 5/67
				4-B1 -170	12/ 5/67
				4-B1 -171	12/ 5/67
				4-B1 -172	12/ 5/67
				4-B1 -173	12/ 5/67
				4-B1 -174	6/21/67
				4-B1 -175	6/21/67
				4-B1 -176	5/14/69
				4-B1 -177	12/ 5/67
				4-B1 -178	6/21/67
				4-B1 -179	12/ 5/67
				4-B1 -180	6/21/67
				4-B1 -181	5/14/69
				4-B1 -182	12/ 5/67
				4-B1 -183	6/21/67
				4-B1 -184	12/ 5/67
				4-B1 -185	6/21/67
				4-B1 -186	5/14/69
				4-B1 -187	12/ 5/67
				4-B1 -188	6/21/67
				4-B1 -189	12/ 5/67
				4-B1 -190	6/21/67
				4-B1 -191	6/21/67
				4-B1 -192	12/ 5/67
				4-B1 -193	6/21/67
				4-B1 -194	12/ 5/67
				4-B1 -195	6/21/67
				4-B1 -196	6/21/67
				4-B1 -197	12/ 5/67
				4-B1 -198	6/21/67
				4-B1 -199	12/ 5/67
				4-B1 -200	6/21/67
				4-B1 -201	6/21/67
				4-B1 -202	5/14/69
				4-B1 -203	6/21/67
				4-B1 -204	5/14/69
				4-B1 -205	6/21/67
				4-B1 -206	6/21/67
				4-B1 -207	5/14/69
				4-B1 -208	6/21/67
				4-B1 -209	5/14/69
				4-B1 -210	6/21/67
				4-B1 -211	6/21/67
				4-B1 -212	5/14/69
				4-B1 -213	6/21/67
				4-B1 -214	5/14/69
				4-B1 -215	
				THRU	
				4-B1 -320	
				INCL	6/21/67
				4-B1 -321	5/14/69
				4-B1 -322	5/14/69
				4-B1 -323	5/14/69
				4-B1 -324	5/14/69
				4-B1 -325	6/21/67
				4-B1 -326	5/14/69
				4-B1 -327	5/14/69
				4-B1 -328	5/14/69
				4-B1 -329	5/14/69
				4-B1 -330	6/21/67
				4-B1 -331	5/14/69
				4-B1 -332	5/14/69
				4-B1 -333	5/14/69
				4-B1 -334	5/14/69
				4-B1 -335	6/21/67
				4-B1 -336	6/21/67
				4-B1 -337	6/21/67
				4-B1 -338	6/21/67
				4-B1 -339	6/21/67
				4-B1 -340	12/ 5/67
				4-B1 -341	12/ 5/67
				4-B1 -342	12/ 5/67
				4-B1 -343	12/ 5/67
				4-B1 -344	12/ 5/67
				4-B1 -345	12/ 5/67
				4-B1 -346	12/ 5/67
				4-B1 -347	12/ 5/67
				4-B1 -348	6/21/67
				4-B1 -349	6/21/67
				4-B1 -350	6/21/67
				4-B1 -351	12/ 5/67
				4-B1 -352	6/21/67
				4-B1 -353	12/ 5/67
				4-B1 -354	6/21/67
				4-B1 -355	6/21/67
				4-B1 -356	12/ 5/67
				4-B1 -357	6/21/67
				4-B1 -358	12/ 5/67
				4-B1 -359	6/21/67
				4-B1 -360	5/14/69



## SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

## Structural &amp; Civil Engineers

PROJECT THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL - PANEL SCHEDULES AND DETAILS

DATE

10/ 5/72

## REVISIONS

PRINTED  
5/18/73

4-B1 -361	12/ 5/67	INCL	11/10/69	4-B3 - 2.3	8/ 3/70
4-B1 -362	5/14/69	4-B1 -508	11/10/69	4-B3 - 2.4	8/ 3/70
4-B1 -363	12/ 5/67	4-A82- 1	3/16/70	4-A83- 3	3/16/70
4-B1 -364	6/21/67	4-A82- 2	7/18/69	4-A83- 4	3/16/70
4-B1 -365	5/14/69	4-A82- 3	5/11/67	4-A83- 5.1	8/ 3/70
4-B1 -366	12/ 5/67	4-A82- 4	7/18/69	4-A83- 5.2	8/ 3/70
4-B1 -367	5/14/69	4-A82- 5	7/18/69	4-A83- 6	8/ 3/70
4-B1 -368	12/ 5/67	4-A82- 6	5/11/67	4-A83- 7.1	8/ 3/70
4-B1 -369	6/21/67	4-A82- 7	11/ 7/67	4-A83- 7.2	4/27/70
4-B1 -370	5/14/69	4-A82- 8	3/16/70	4-A83- 7.3	8/ 3/70
4-B1 -371	12/ 5/67	4-A82- 9	6/ 5/67	4-A83- 8.1	8/ 3/70
4-B1 -372	5/14/69	4-A82- 10	7/28/67	4-A83- 8.2	8/ 3/70
4-B1 -373	12/ 5/67	4-A82- 11	3/16/70	4-A83- 9	4/10/70
4-B1 -374	6/21/67	4-A82- 12	3/11/68	4-A83- 10	4/27/70
4-B1 -375	6/21/67	4-A82- 13	3/11/68	4-A83- 11	8/ 3/70
4-B1 -376	5/14/69	4-A82- 14	3/11/68		
4-B1 -377	6/21/67	4-A82- 15	5/14/69		
4-B1 -378	5/14/69	4-A82- 16	6/ 5/67		
4-B1 -379	6/21/67	4-A82- 17	6/ 5/67		
4-B1 -380	6/21/67	4-A82- 18	11/ 7/67		
4-B1 -381	5/14/69	4-A82- 19	3/16/70		
4-B1 -382	6/21/67	4-A82- 19.1	3/16/70		
4-B1 -383	5/14/69	4-A82- 20	VC10.		
4-B1 -384	6/21/67	4-A82- 21	7/28/67		
4-B1 -385	6/21/67	4-A82- 22	6/ 5/67		
4-B1 -386	5/14/69	4-A82- 23	11/ 7/67		
4-B1 -387	6/21/67	4-A82- 24	7/28/67		
4-B1 -388	5/14/69	4-A82- 25	6/ 5/67		
4-B1 -389		4-A82- 26	6/ 5/67		
THRU		4-A82- 27	7/18/69		
4-B1 -484		4-A82- 28	6/ 5/67		
INCL	6/21/67	4-A82- 29	3/11/68		
4-B1 -485		4-A82- 30	7/18/69		
THRU		4-A82- 31	11/ 7/67		
4-B1 -488		4-A82- 32	3/16/70		
INCL	9/ 2/69	4-A82- 33	3/16/70		
4-B1 -489	6/21/67	4-A82- 33.1	10/18/68		
4-B1 -490		4-A82- 34	3/16/70		
THRU		4-A82- 35	10/18/68		
4-B1 -493		4-A82- 36	3/12/69		
INCL	9/ 2/69	4-A82- 37	11/10/69		
4-B1 -494	6/21/67				
4-B1 -495					
THRU		4-A83- 1	8/ 3/70		
4-B1 -502		4-A3 - 2.1	8/ 3/70		
INCL	11/10/69	4-A3 - 2.2	8/ 3/70		
4-B1 -503	11/10/69	4-A3 - 2.3	8/ 3/70		
4-B1 -504		4-A3 - 2.4	8/ 3/70		
THRU		4-B3 - 2.1	8/ 3/70		
4-B1 -507		4-B3 - 2.2	8/ 3/70		



4-A80- 0.1

WORTHINGTON, SKILLING, HELLE & JACKSON

Civil & Structural Engineers

PROJECT THE WORLD TRADE CENTER

TITLE DRAWING BOOK 4 GENERAL NOTES

DATE 6-5-67

REVISIONS

12-5-67

6-3-68

1-3-69

2-3-69

3-3-69

4-1-69

Printed 5-1-69

			COLUMN 1					COLUMN 2					COLUMN 3					
PANEL NUMBER			PANEL TYPE	TYPE	FY1	FY2	CSU	CSL	TYPE	FY1	FY2	CSU	CSL	TYPE	FY1	FY2	CSU	CSL
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(5)	(6)	(7)	(8)	(9)	(5)	(6)	(7)	(8)	(9)
			SPANDREL PLATE					WELOMENTS					SEAT DETAIL					
PANEL NUMBER			FLOOR	T4	FY4	SCL	SCR	NO 5	NO 6	NO 7	COL 1	COL 2	COL 3					
(1)	(2)	(3)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(19)	(19)				

NOTES

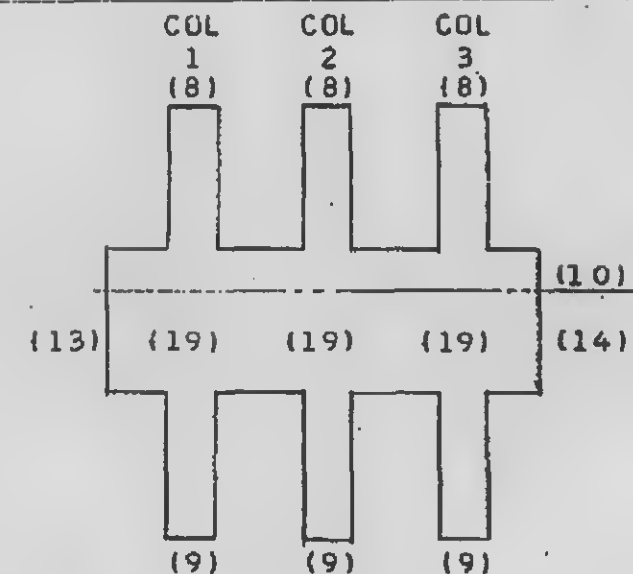
REF DWGS 4-AB2-

- (1) COLUMN NUMBER FOR CENTER COLUMN OF PANEL
- (2) NUMBER OF STORY CONTAINING UPPER SPLICE
- (3) NUMBER OF STORY CONTAINING LOWER SPLICE
- (4) PANEL TYPE
- (5) COLUMN TYPE
- (6) REQUIRED YIELD STRENGTH FOR PLATE NO.1(KSI)
- (7) REQUIRED YIELD STRENGTH FOR PLATES NO.2 AND NO.3 (KSI)
- (8) COLUMN SPLICE UPPER (DETAIL NUMBER)
- (9) COLUMN SPLICE LOWER (DETAIL NUMBER)
- (10) FLOOR LEVEL OF SPANDREL
- (11) THICKNESS OF SPANDREL PLATE NO.4 (INCHES)
- (12) REQUIRED YIELD STRENGTH FOR PLATE NO.4(KSI)
- (13) SPANDREL CONNECTION LEFT (DETAIL NUMBER)
- (14) SPANDREL CONNECTION RIGHT (DETAIL NUMBER)
- (15) SIZE OF WELD NO. 5
- (16) LENGTH OF WELD NO. 5
- (17) SIZE OF WELD NO. 6
- (18) SIZE OF WELD NO. 7
- (19) SEAT DETAIL NUMBER
- (20) PANELS ARE VIEWED FROM INSIDE OF BUILDING LOOKING OUT

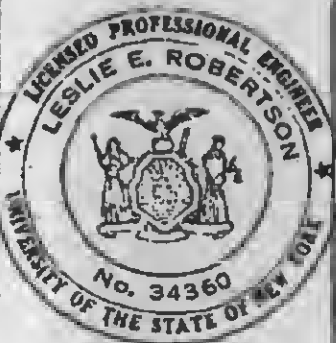
2 TO 7  
8 TO 10

12 TO 16  
12 TO 16

26 TO 30  
26 TO 30  
11,18 TO 24  
11,18 TO 24  
11,18 TO 24  
11,18 TO 24  
31 TO 36



Rev. No 1. 7-10-67  
No 2. 12-5-67



PROJECT *THE WORLD TRADE CENTER*

TITLE *EXTERIOR WALL - DETAILS - INDEX*

DATE *6-5-67*

REVISIONS

*7-10-67*  
*6-3-68*  
*1-3-69*  
*2-3-69*  
*3-3-69*  
*4-1-69*  
*Printed 5-1-69*  
*11-10-69*  
*3-16-70*

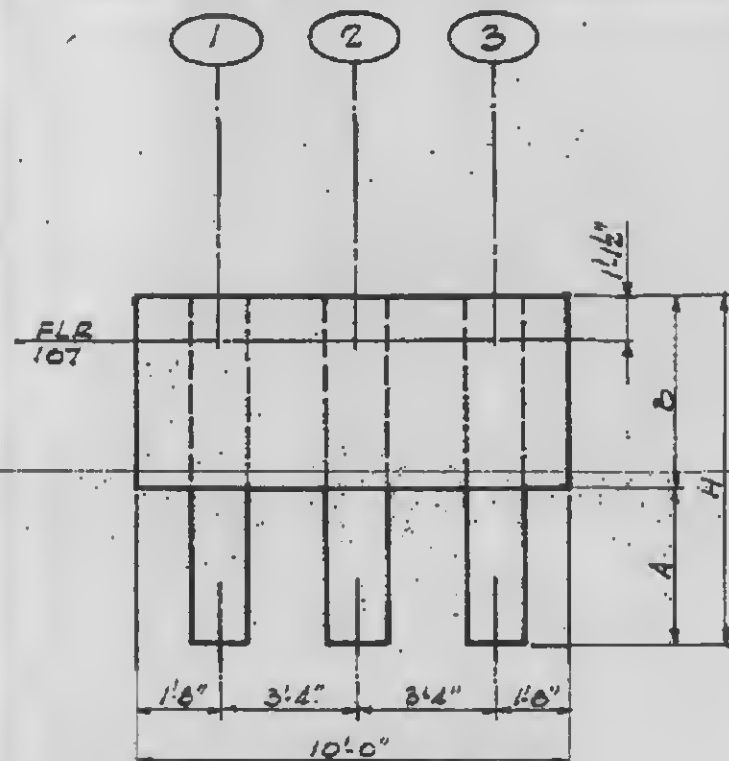
- 4-AB2-1 Index*
- 4-AB2-2 Panel types 100-150*
- 4-AB2-3 Panel types 200-216*
- 4-AB2-4 Panel types 220-240*
- 4-AB2-5 Panel types 300-320*
- 4-AB2-6 Panel types 400-421*
- 4-AB2-7 Panel dimension schedule*
- 4-AB2-8 Column type 100*
- 4-AB2-9 Column type 300*
- 4-AB2-10 Column type 400 & 500*
- 4-AB2-11 Detail 1*
- 4-AB2-12 Column splice 411-493 & 681-693*
- 4-AB2-13 Column splice 101-113*
- 4-AB2-14 Column splice 121-123*
- 4-AB2-15 Column splice schedule*
- 4-AB2-16 Column splice details*
- 4-AB2-17 Welding Electrodes*
- 4-AB2-18 Detail 2*
- 4-AB2-19 Detail 3*
- 4-AB2-19.1 DETAIL 3*
- 4-AB2-20 DETAIL 3A*
- 4-AB2-21 DETAIL 4, 4, 5*
- 4-AB2-22 Detail 6*
- 4-AB2-23 Detail 7*
- 4-AB2-24 Detail 8*
- 4-AB2-25 Weld \*10*
- 4-AB2-26 Spandrel connection details 101-135*
- 4-AB2-27 Spandrel connection details 201-301*
- 4-AB2-28 Spandrel connection details 401-416*
- 4-AB2-29 Spandrel connection splice plate*
- 4-AB2-30 Spandrel connection Schedule*
- 4-AB2-31 Seat details 1013-3511*
- 4-AB2-32 Seat details 4064-4731*
- 4-AB2-33 Exterior wall seat details*
- 4-AB2-33.1 Exterior wall seat details*
- 4-AB2-34 Seat details 7010-7494*
- 4-AB2-35 Seat Detail Schedule I*
- 4-AB2-36 Seat Detail Schedule II*
- 4-AB2-37 Seat Detail Schedule III*



REVISIONS

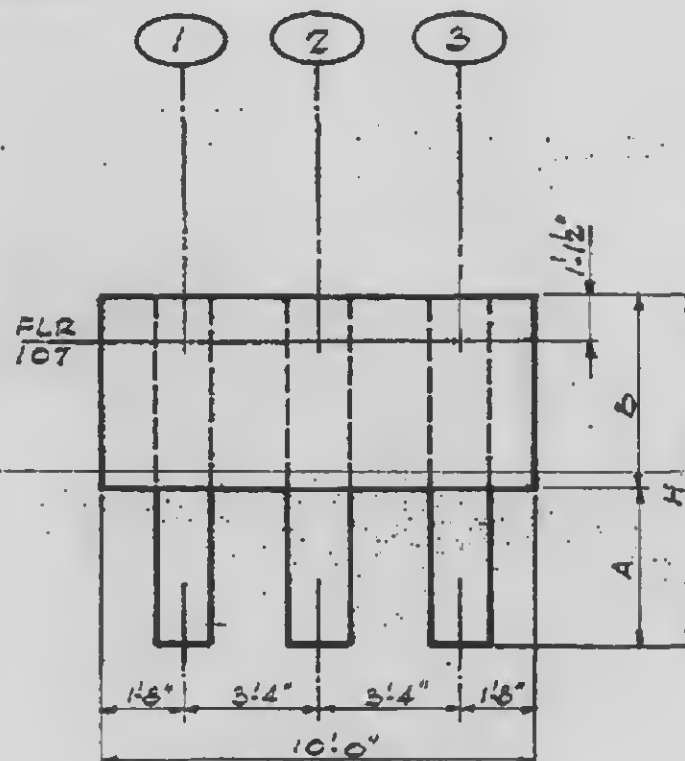
7-18-69

Note: See 4-AB2-7 for dimension schedule



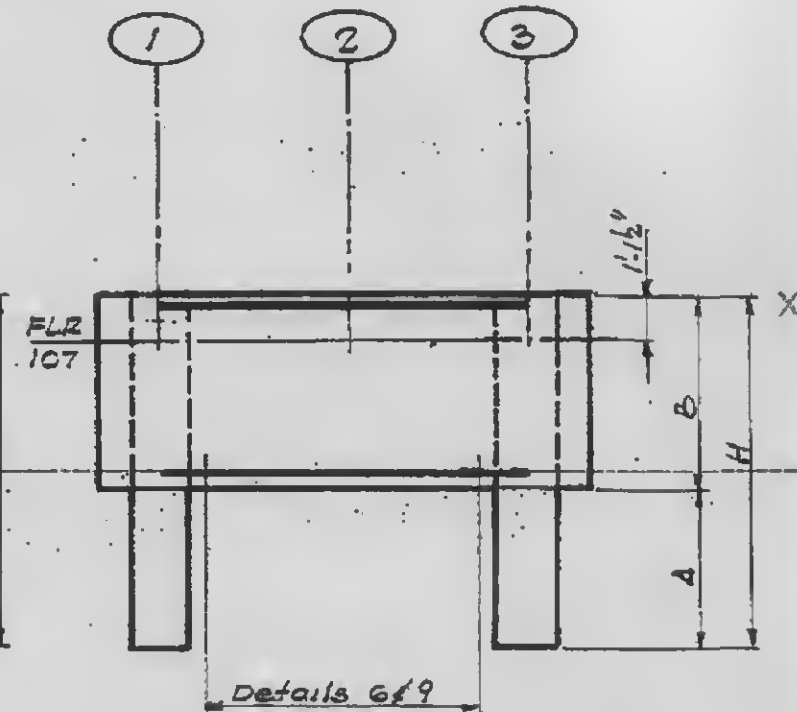
PANEL TYPE 130

Cols. 1 & 3 - Details 1 & 3  
Col. 2 - Details 1 & 3



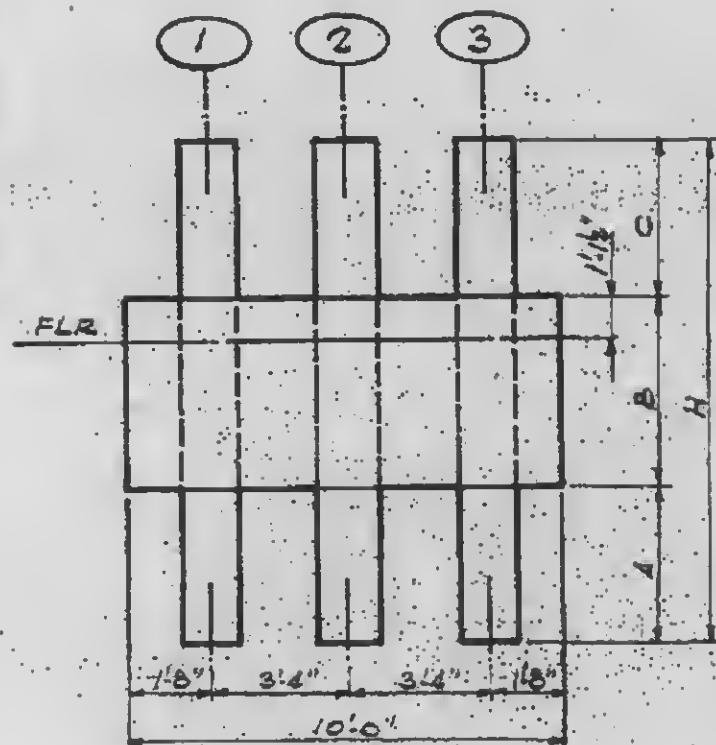
PANEL TYPE 140

Cols. 1 & 3 - Details 1 & 3  
Col. 2 - Details 1 & 3



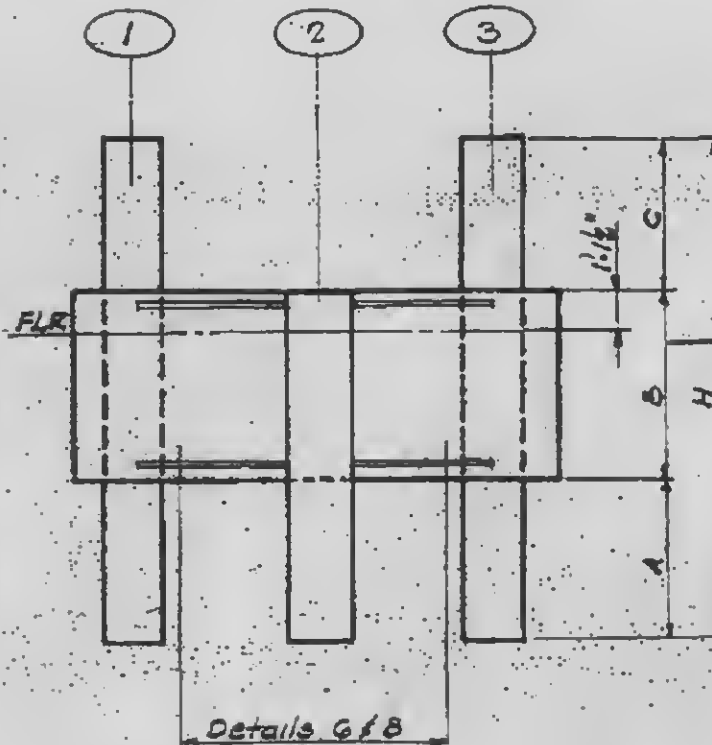
PANEL TYPE 150

Cols. 1 & 3 - Details 1 & 3



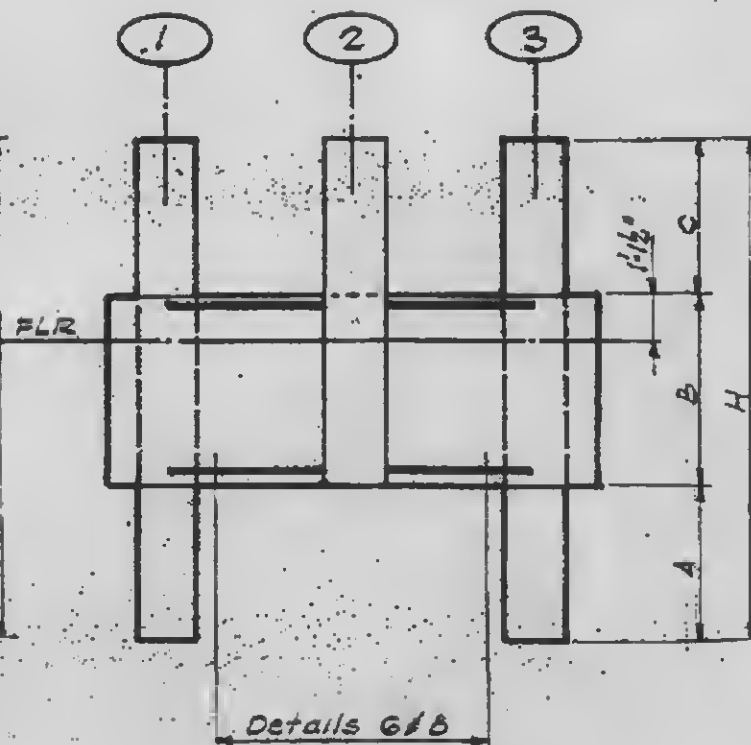
PANEL TYPES 100-102

Detail 1



PANEL TYPES 110-112

Cols. 1 & 3 - Detail 1  
Col. 2 - Details 1 & 4



PANEL TYPE 120

Cols. 1 & 3 - Detail 1  
Col. 2 - Details 1 & 4

4-AB2-2





WORTHINGTON, SKILLING, HELLE & JACKSON

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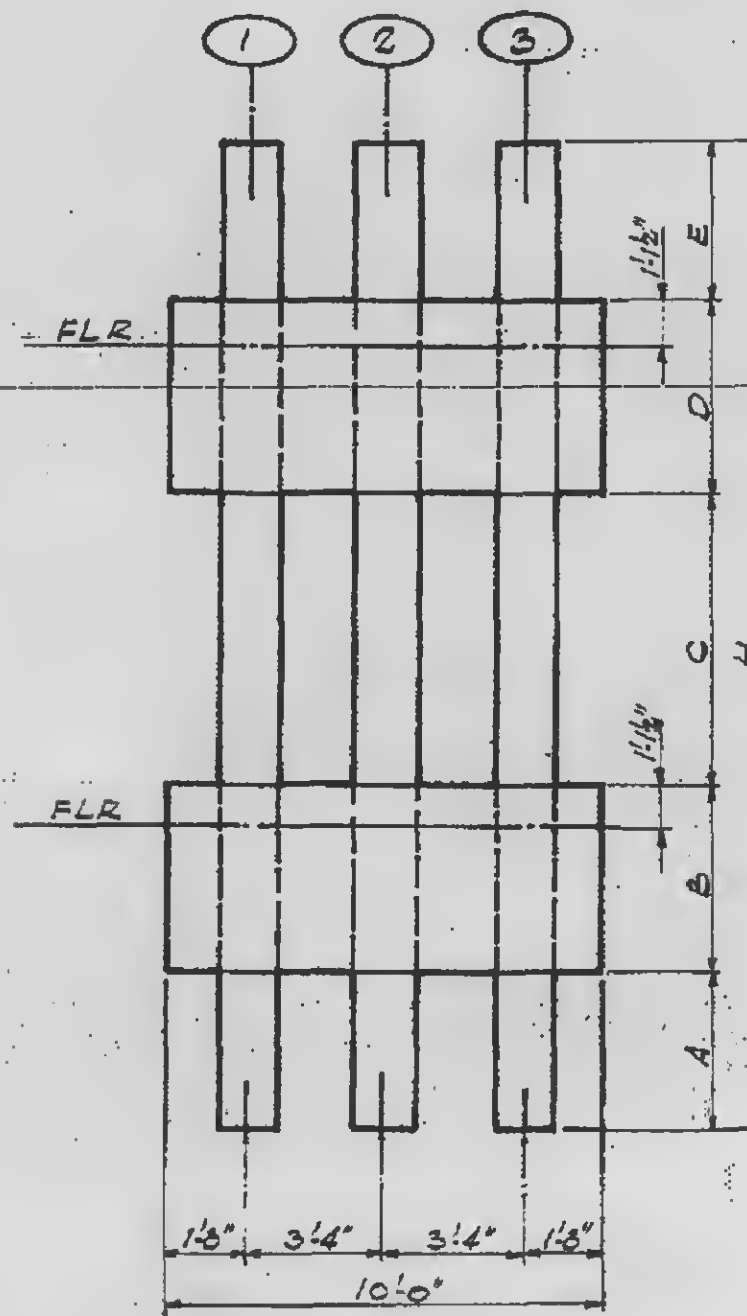
PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - PANEL TYPES 200-216

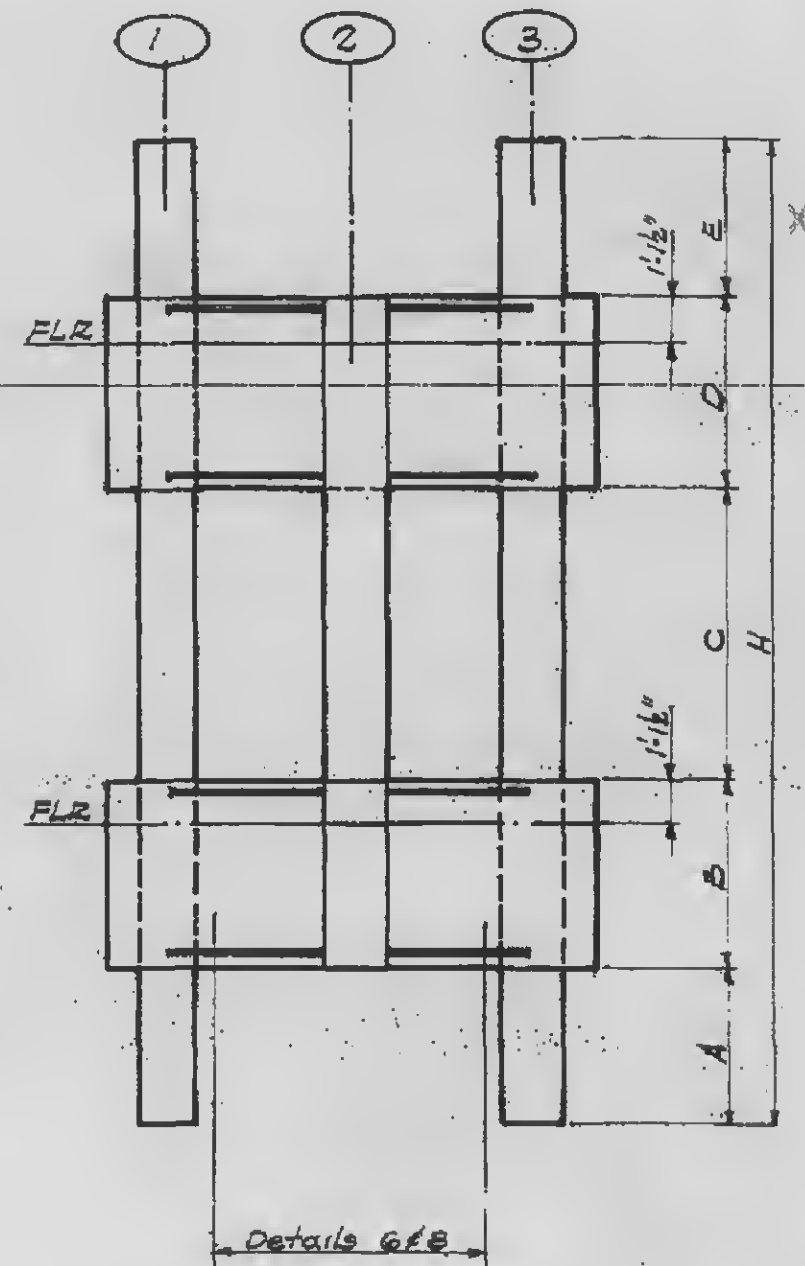
DATE 5-11-67

REVISIONS

Note: See 4-AB2-7 for dimension schedule



PANEL TYPES 200-202  
Cols. 1, 2 & 3 - Detail 1



PANEL TYPES 210-216  
Cols. 1 & 3 - Detail 1  
Col. 2 - Detail 4



4-AB2-3

WORTHINGTON, SKILLING, HELLE & JACKSON

Civil & Structural Engineers

PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL - PANEL TYPES 220-240

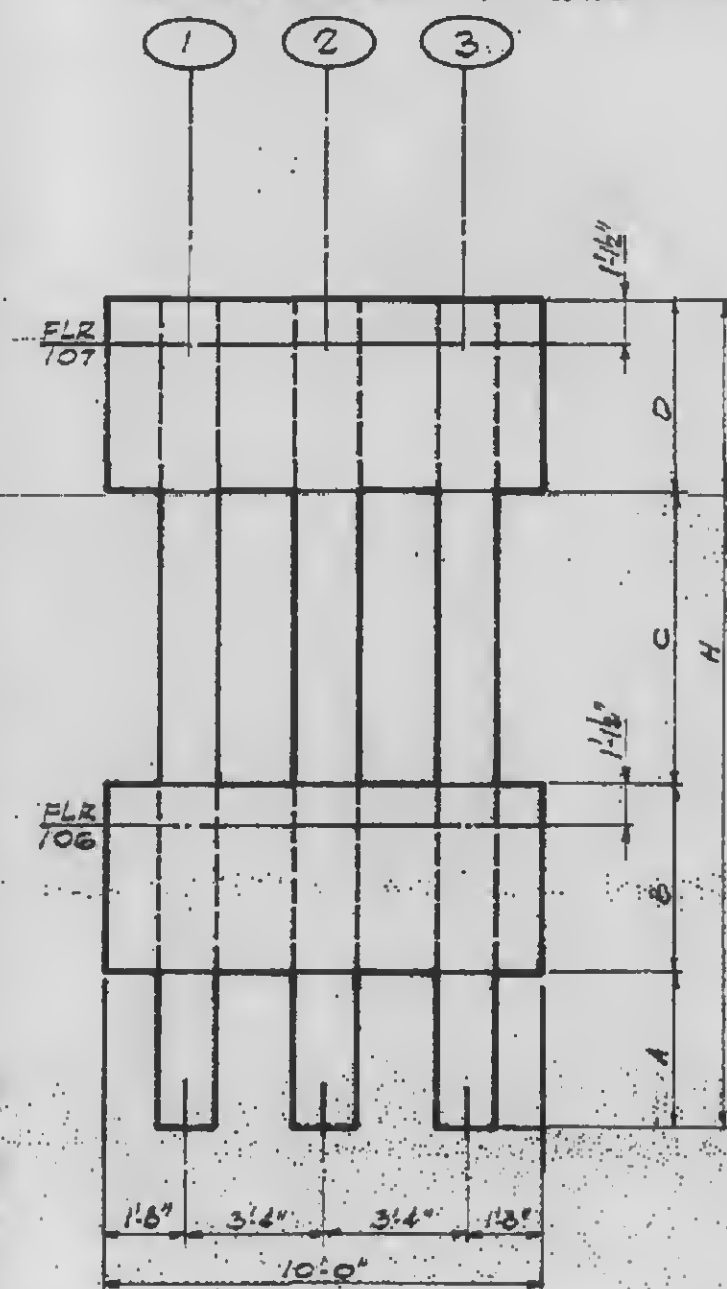
DATE

5-11-67

REVISIONS

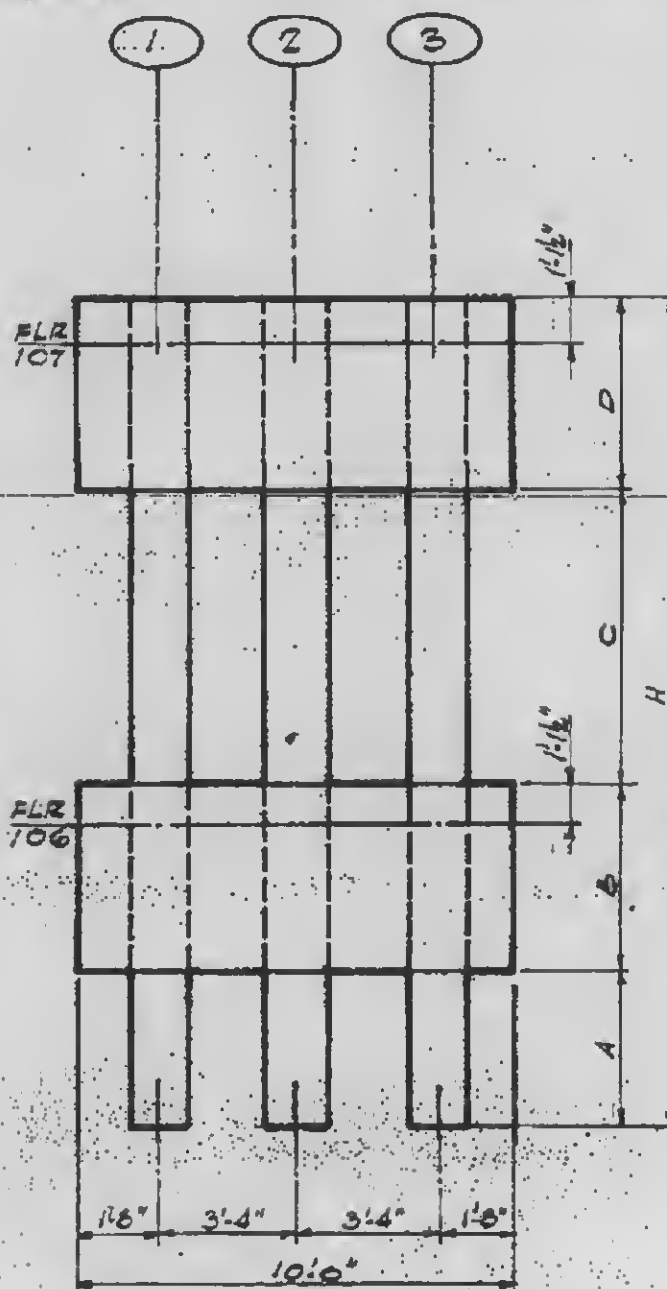
7-18-69

Note: See 4-AB2-7 for dimension schedule



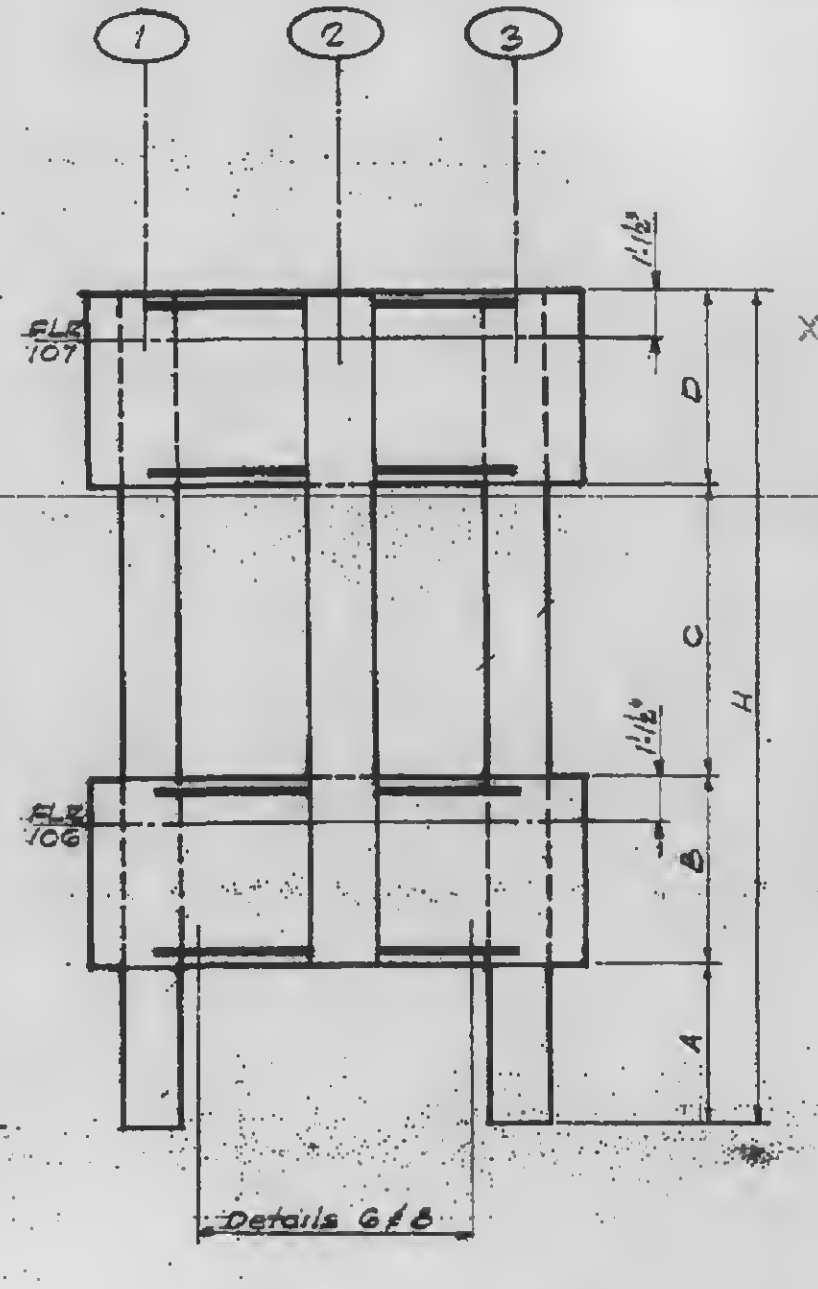
PANEL TYPE 220

Cols. 1 & 3 - Details 1 & 3  
Col. 2 - Details 1 & 3



PANEL TYPE 230

Cols. 1 & 3 - Details 1 & 3  
Col. 2 - Details 1 & 3



PANEL TYPE 240

Cols. 1 & 3 - Details 1 & 3  
Col. 2 - Detail 4



4-AB2-4



PROJECT THE WORLD TRADE CENTER

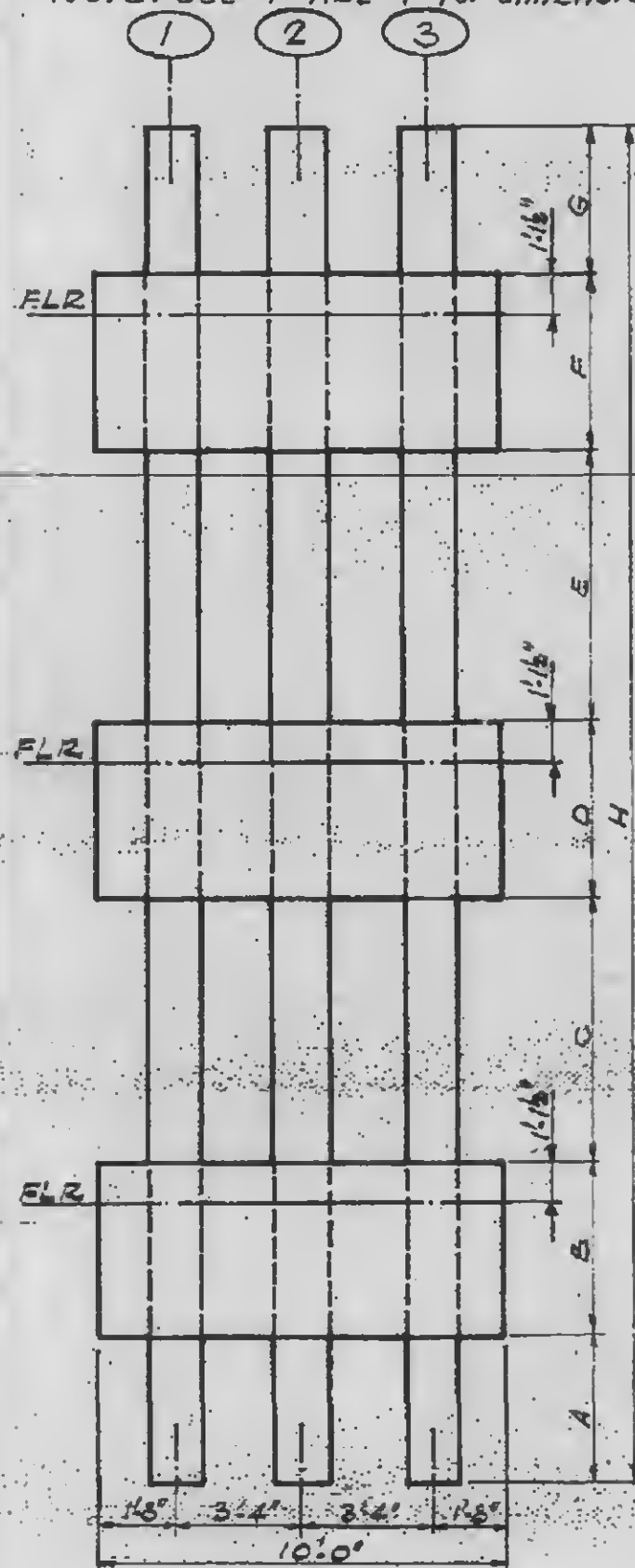
TITLE EXTERIOR WALL - PANEL TYPES 300-320

DATE 5-11-67

REVISIONS

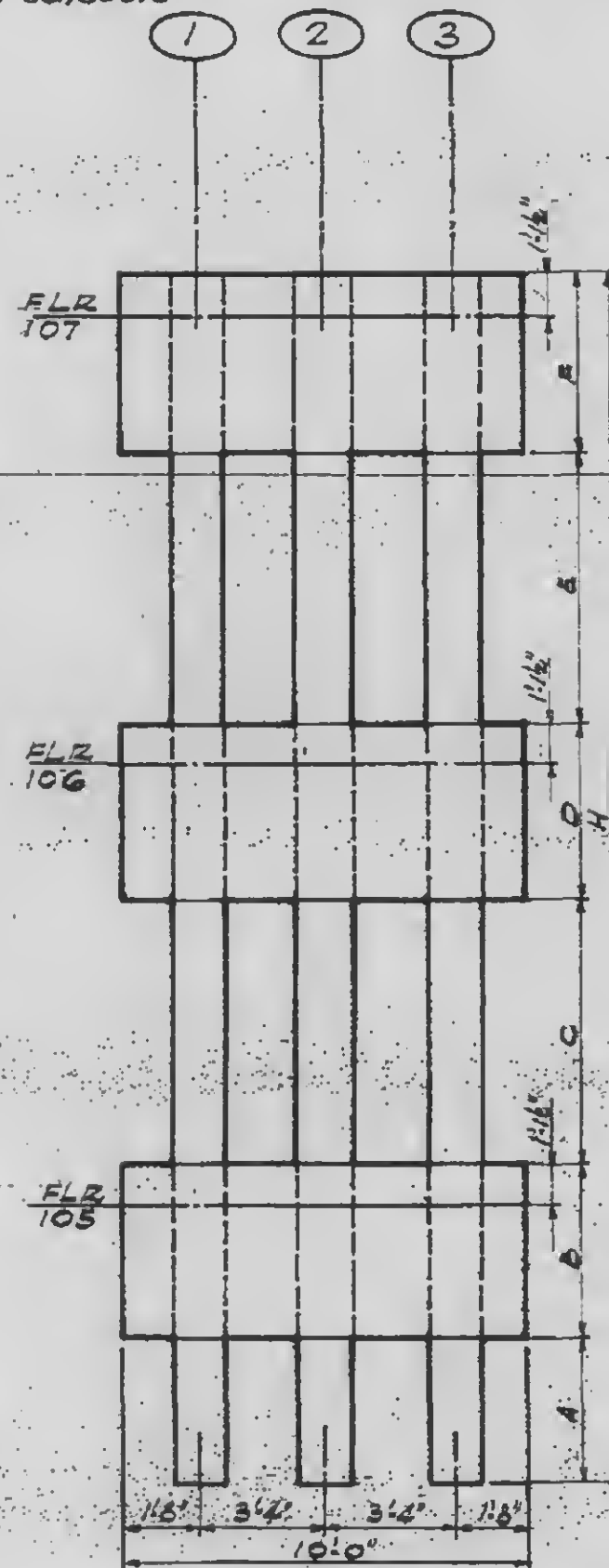
7-18-69

Note: See 4-AB2-7 for dimension schedule



PANEL TYPES 300-307

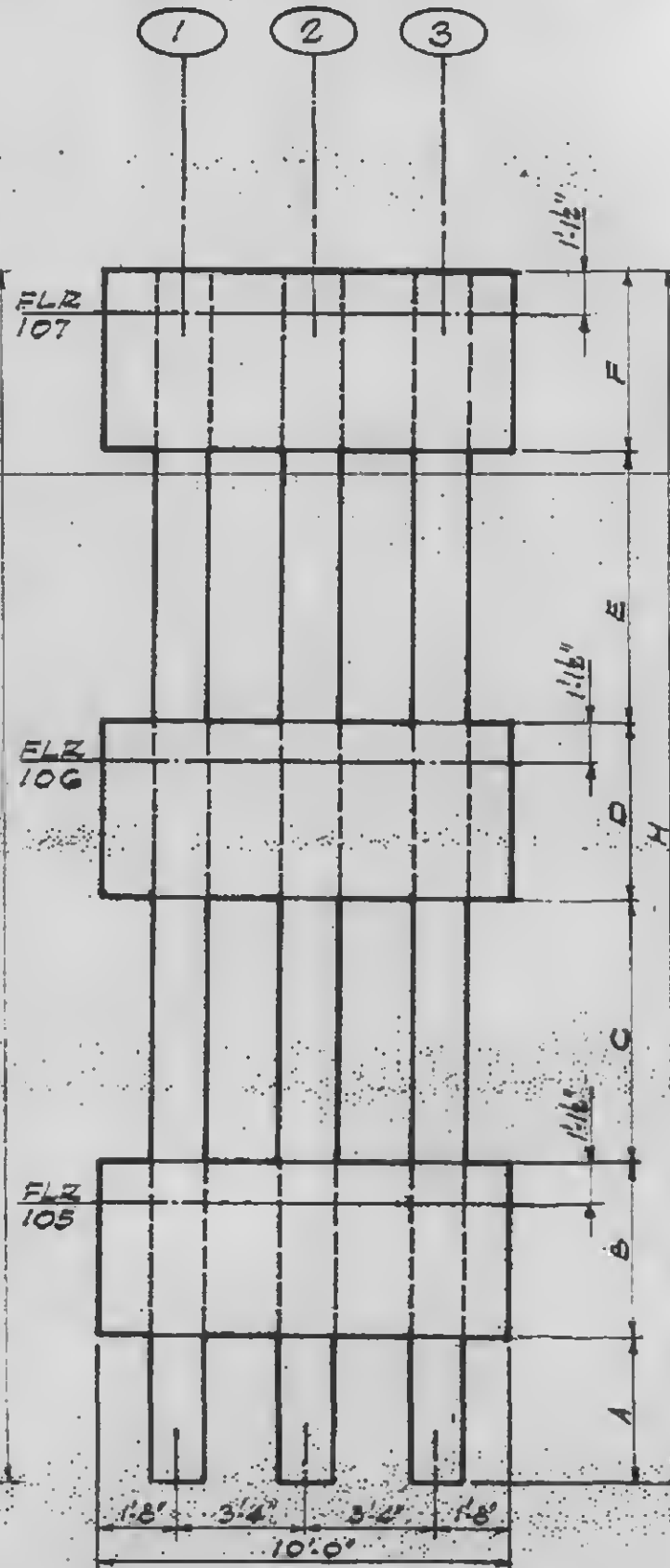
Cols. 1, 2 & 3 - Detail 1



PANEL TYPE 310

Cols. 1 & 3 - Details 1 & 3

Col. 2 - Details 1 & 3



PANEL TYPE 320

Cols. 1 & 3 - Details 1 & 3

Col. 2 - Details 2 & 3

4-AB2-5



WORTHINGTON, SKILLING, HELLE & JACKSON

Civil & Structural Engineers

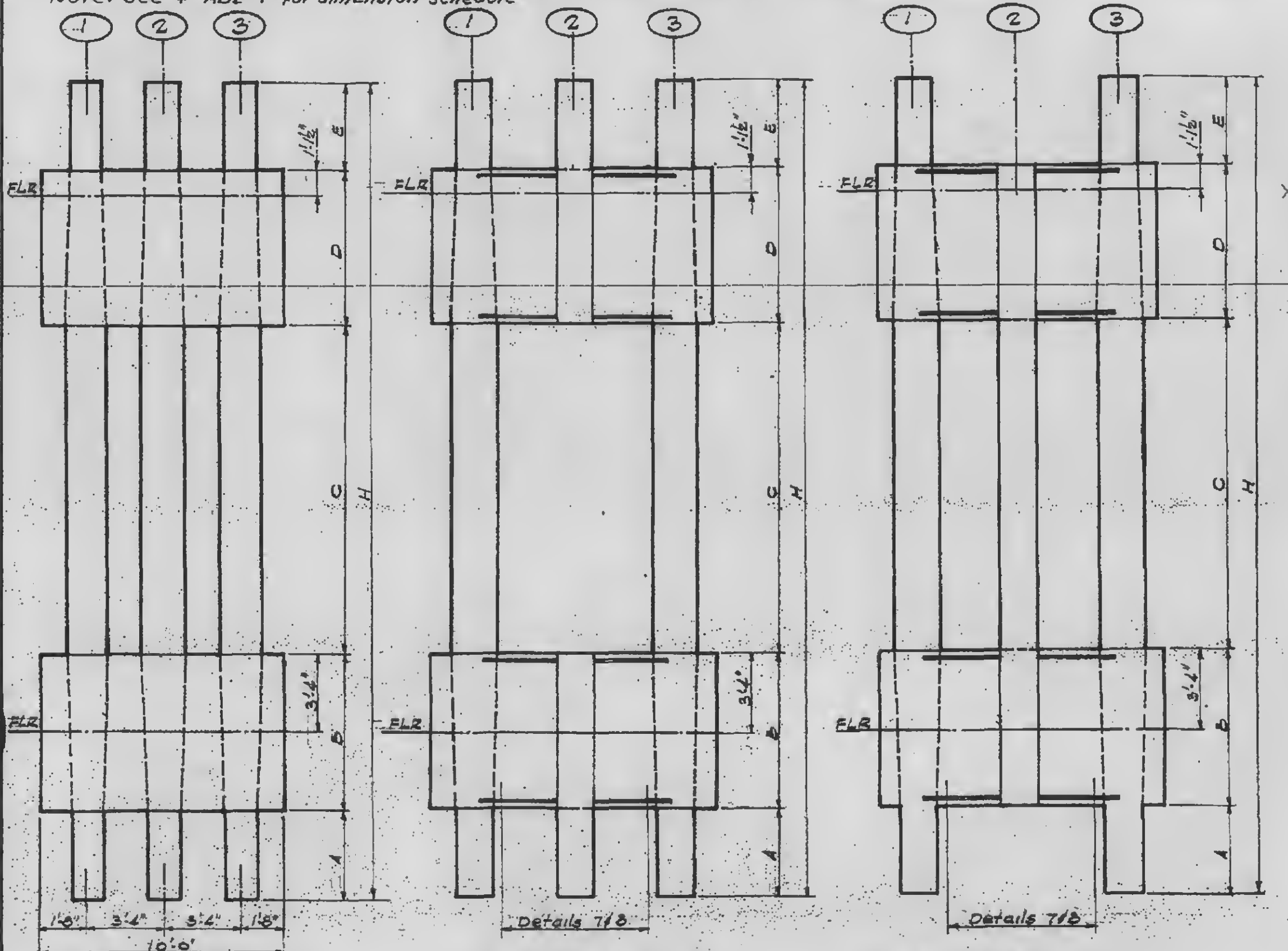
PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - PANEL TYPES 400-421

DATE 5-11-67

REVISIONS

Note: See 4-AB2-7 for dimension schedule



PANEL TYPES 400-401

Cols. 1, 2 & 3 - Detail 2

PANEL TYPES 410-411

Cols. 1 & 3 - Detail 2

Col. 2 - Details 1 & 5

PANEL TYPES 420-421

Cols. 1 & 3 - Detail 2

Col. 2 - Detail 5

4-AB2-G



## SKILLING-HELLE-CHRISTIANSEN-ROBERTSON

## Civil &amp; Structural Engineers

PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL - PANEL DIMENSIONS SCHEDULE

DATE

11- 7-67

REVISIONS

## DIMENSIONS IN FEET AND INCHES

PANEL TYPE	A	B	C	D	E	F	G	H
100	3-10	4- 4	3-10					12-0
101	3-10	4- 4	4- 4					12-6
102	4- 4	5- 4	4- 4					14-0
110	3-10	4- 4	3-10					12-0
111	3-10	4- 4	4- 4					12-6
112	4- 4	5- 4	4- 4					14-0
120	3-10	4- 4	3-10					12-0
130	3-10	6- 8						10-6
140	3-10	6- 8						10-6
150	3-10	6- 8						10-6
200	3-10	4- 4	7- 8	4- 4	3-10			24-0
201	3-10	4- 4	8- 8	5- 4	3-10			26-0
202	4- 4	5- 4	8- 8	5- 4	3-10			27-6
210	3-10	4- 4	7- 8	4- 4	3-10			24-0
211	3-10	4- 4	7- 8	4- 4	5- 3			25-0
212	4- 4	5- 4	7- 8	4- 4	3-10			25-6
213	3-10	4- 4	8- 8	5- 4	3-10			26-0
214	5- 3	5- 6	7- 8	4- 4	3-10			26-7
215	4- 4	5- 4	8- 8	5- 4	3-10			27-6
216	3-10	4- 4	10- 6	5- 6	3-10			28-0
220	3-10	4- 4	7- 8	6- 8				22-6
230	3-10	4- 4	7- 8	6- 8				22-6
240	3-10	4- 4	7- 8	6- 8				22-6
300	3-10	4- 4	7- 8	4- 4	7- 8	4- 4	3-10	36-0
301	3-10	4- 4	7- 8	4- 4	7- 8	4- 4	5- 3	37-5
302	4- 4	5- 4	7- 8	4- 4	7- 8	4- 4	3-10	37-6
303	3-10	4- 4	8- 8	5- 4	7- 8	4- 4	3-10	38-0
304	5- 3	5- 6	7- 8	4- 4	7- 8	4- 4	3-10	38-7
305	4- 4	5- 4	8- 8	5- 4	7- 8	4- 4	3-10	39-6
306	3-10	4- 4	7- 8	4- 4	10- 6	5- 6	3-10	40-0
307	3-10	4- 4	10- 6	5- 6	7- 8	4- 4	3-10	40-0
310	3-10	4- 4	7- 8	4- 4	7- 8	6- 8		34-6
320	3-10	4- 4	7- 8	4- 4	7- 8	6- 8		34-6
400	4- 1-1/2	8- 3	17- 6-1/2	8- 3	3-10			42-0
401	4- 1-1/2	8- 3	17- 6-1/2	8- 3	4- 4			42-6
410	4- 1-1/2	8- 3	17- 6-1/2	8- 3	3-10			42-0
411	4- 1-1/2	8- 3	17- 6-1/2	8- 3	4- 4			42-6
420	4- 1-1/2	8- 3	17- 6-1/2	8- 3	3-10			42-0
421	4- 1-1/2	8- 3	17- 6-1/2	8- 3	4- 4			42-0

Note: See 4-AB2-2 to 4-AB2-6  
for panel types



WORTHINGTON, SKILLING, HELLE & JACKSON

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PROJECT THE WORLD TRADE CENTER

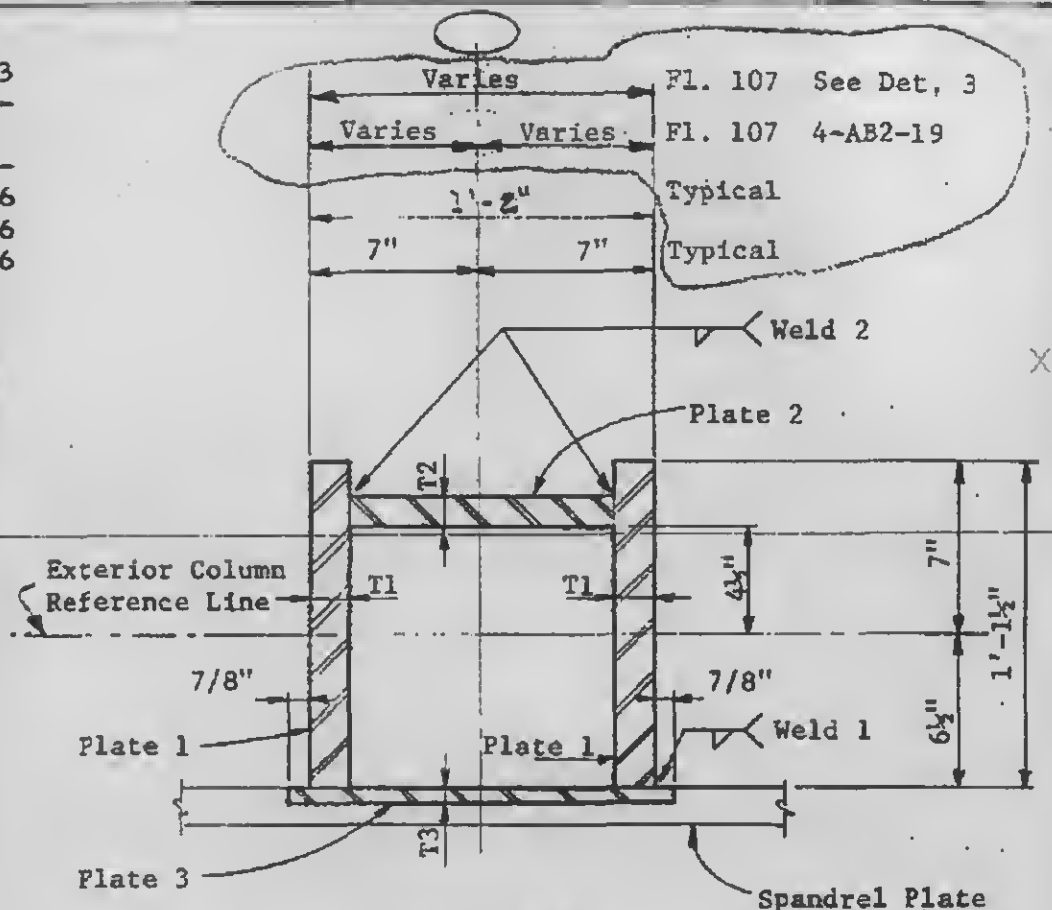
TITLE EXTERIOR WALL - COLUMN TYPE 100

DATE 6-5-67

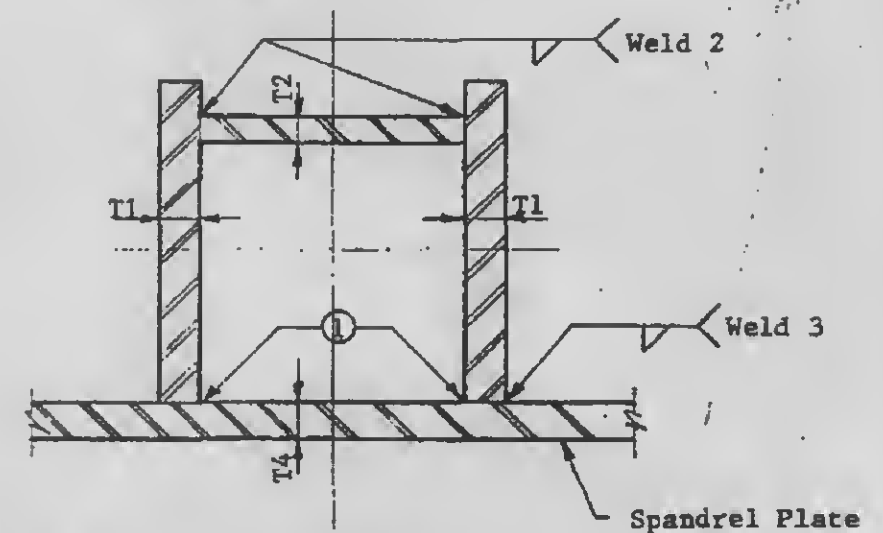
REVISIONS

3/16/70

COLUMN TYPE	PLATE 1 T1 (IN)	PLATE 2 T2 (IN)	PLATE 3 T2 (IN)	WELD 1 IN	WELD 2 IN	WELD 3 IN
120	1/4	1/4	1/4	1/4	1/4	5/16
121	5/16	1/4	1/4	5/16	1/4	5/16
122	3/8	1/4	1/4	5/16	1/4	5/16
123	7/16	1/4	1/4	3/8	1/4	3/8
124	1/2	1/4	1/4	3/8	1/4	3/8
125	9/16	1/4	1/4	3/8	5/16	3/8
126	5/8	1/4	1/4	3/8	5/16	3/8
127	11/16	1/4	1/4	3/8	5/16	3/8
128	3/4	1/4	1/4	3/8	5/16	3/8
129	13/16	5/16	5/16	1/2	5/16	1/2
130	7/8	5/16	5/16	1/2	5/16	1/2
131	15/16	5/16	5/16	1/2	5/16	1/2
132	1	3/8	3/8	1/2	5/16	1/2
133	1- 1/16	3/8	3/8	1/2	5/16	1/2
134	1- 1/8	3/8	3/8	1/2	5/16	1/2
135	1- 3/16	7/16	7/16	1/2	5/16	1/2
136	1- 1/4	7/16	7/16	1/2	5/16	1/2
137	1- 5/16	7/16	7/16	1/2	3/8	1/2
138	1- 3/8	1/2	1/2	1/2	3/8	1/2
139	1- 7/16	1/2	1/2	1/2	3/8	1/2
140	1- 1/2	1/2	1/2	1/2	3/8	1/2
141	1- 9/16	9/16	9/16	1/2	3/8	1/2
142	1- 5/8	9/16	9/16	1/2	3/8	1/2
143	1-11/16	9/16	9/16	1/2	3/8	1/2
144	1- 3/4	5/8	5/8	1/2	3/8	1/2
145	1-13/16	5/8	5/8	5/8	3/8	5/8
146	1- 7/8	5/8	5/8	5/8	3/8	5/8
147	1-15/16	11/16	11/16	5/8	3/8	5/8
148	2	11/16	11/16	5/8	3/8	5/8
149	2- 1/16	11/16	11/16	5/8	3/8	5/8
150	2- 1/8	3/4	3/4	5/8	3/8	5/8
151	2- 3/16	3/4	3/4	5/8	3/8	5/8
152	2- 1/4	3/4	3/4	5/8	3/8	5/8
153	2- 5/16	13/16	13/16	5/8	1/2	5/8
154	2- 3/8	13/16	13/16	5/8	1/2	5/8
155	2- 7/16	13/16	13/16	5/8	1/2	5/8
156	2- 1/2	7/8	7/8	5/8	1/2	5/8
157	2- 9/16	7/8	7/8	5/8	1/2	5/8
158	2- 5/8	7/8	7/8	5/8	1/2	5/8
159	2-11/16	15/16	15/16	5/8	1/2	5/8
160	2- 3/4	15/16	15/16	5/8	1/2	5/8
161	2-13/16	15/16	15/16	5/8	1/2	5/8
162	2- 7/8	1	1	5/8	1/2	5/8
163	2-15/16	1	1	5/8	1/2	5/8
164	3	1	1	5/8	1/2	5/8



SECTION a-a  
(See 4-AB2-11)



① Weld 5 or 7; see 4-AB2-11

SECTION b-b  
(See 4-AB2-11)

Note: Weld 1 and 3 use Electrode 1. See 4-AB2-17  
Weld 2 use Electrode 2. See 4-AB2-17



WORTHINGTON, SKILLING, HELLE & JACKSON

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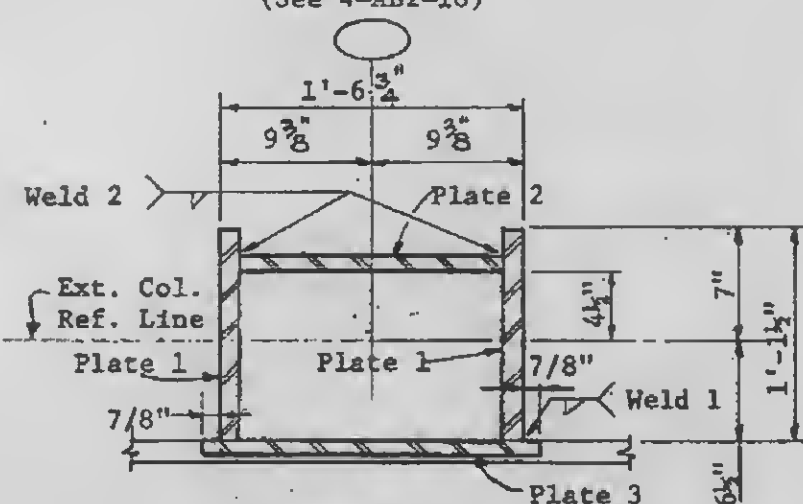
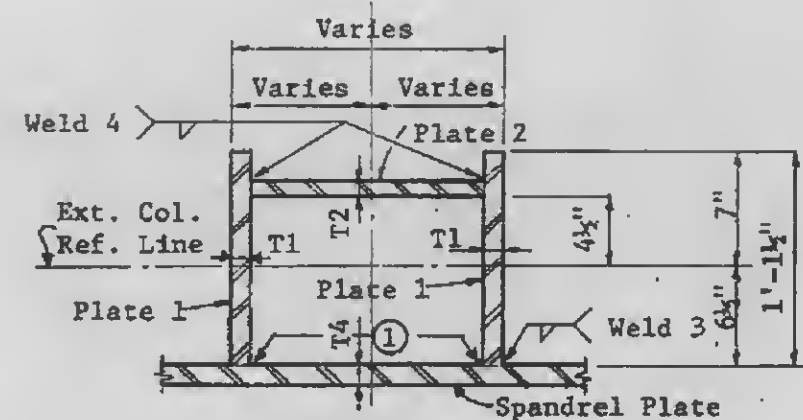
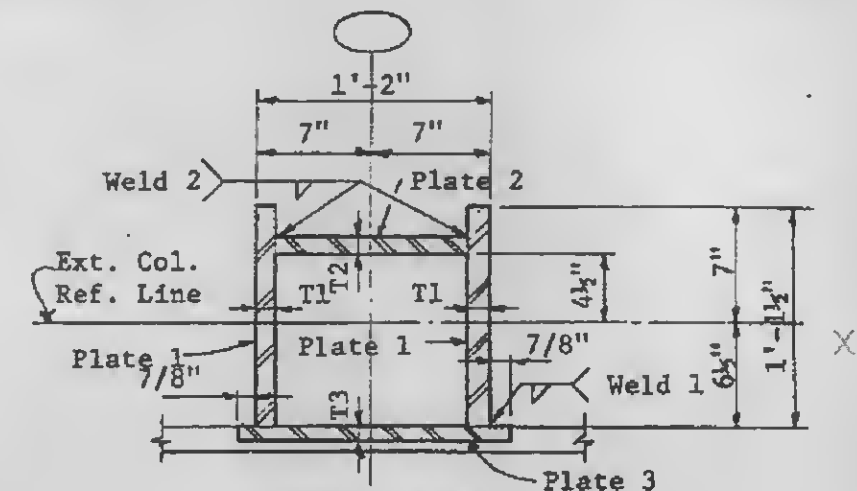
PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - COLUMN TYPE 300

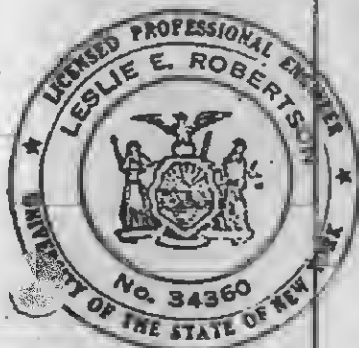
DATE 6- 5-67

REVISIONS

COLUMN TYPE	PLATE 1 T1 (IN)	PLATE 2 T2 (IN)	PLATE 3 T2 (IN)	WELD 1 IN	WELD 2 IN	WELD 3 IN	WELD 4 IN
320	1/4	1/4	1/4	1/4	1/4	5/16	1/4
321	5/16	1/4	1/4	5/16	1/4	5/16	5/16
322	3/8	1/4	1/4	5/16	1/4	5/16	5/16
323	7/16	1/4	1/4	3/8	1/4	3/8	1/2
324	1/2	1/4	1/4	3/8	1/4	3/8	1/2
325	9/16	1/4	1/4	3/8	5/16	3/8	1/2
326	5/8	1/4	1/4	3/8	5/16	3/8	1/2
327	11/16	1/4	1/4	3/8	5/16	3/8	1/2
328	3/4	1/4	1/4	3/8	5/16	3/8	1/2
329	13/16	5/16	5/16	1/2	5/16	1/2	3/4
330	7/8	5/16	5/16	1/2	5/16	1/2	3/4
331	15/16	5/16	5/16	1/2	5/16	1/2	3/4
332	1	3/8	5/8	1/2	5/16	1/2	3/4
333	1- 1/16	3/8	5/8	1/2	5/16	1/2	3/4
334	1- 1/8	3/8	5/8	1/2	5/16	1/2	3/4
335	1- 3/16	7/16	7/16	1/2	5/16	1/2	3/4
336	1- 1/4	7/16	7/16	1/2	5/16	1/2	3/4
337	1- 5/16	7/16	7/16	1/2	3/8	1/2	3/4
338	1- 3/8	1/2	1/2	1/2	3/8	1/2	3/4
339	1- 7/16	1/2	1/2	1/2	3/8	1/2	3/4
340	1- 1/2	1/2	1/2	1/2	3/8	1/2	3/4
341	1- 9/16	9/16	9/16	1/2	3/8	1/2	3/4
342	1- 5/8	9/16	9/16	1/2	3/8	1/2	3/4
343	1-11/16	9/16	9/16	1/2	3/8	1/2	3/4
344	1- 3/4	5/8	5/8	1/2	3/8	1/2	3/4
345	1-13/16	5/8	5/8	5/8	3/8	5/8	1
346	1- 7/8	5/8	5/8	5/8	3/8	5/8	1
347	1-15/16	11/16	11/16	5/8	3/8	5/8	1
348	2	11/16	11/16	5/8	3/8	5/8	1
349	2- 1/16	11/16	11/16	5/8	3/8	5/8	1
350	2- 1/8	3/4	3/4	5/8	3/8	5/8	1
351	2- 3/16	3/4	3/4	5/8	3/8	5/8	1
352	2- 1/4	3/4	3/4	5/8	3/8	5/8	1
353	2- 5/16	13/16	13/16	5/8	1/2	5/8	1
354	2- 3/8	13/16	13/16	5/8	1/2	5/8	1
355	2- 7/16	13/16	13/16	5/8	1/2	5/8	1
356	2- 1/2	7/8	7/8	5/8	1/2	5/8	1
357	2- 9/16	7/8	7/8	5/8	1/2	5/8	1
358	2- 5/8	7/8	7/8	5/8	1/2	5/8	1
359	2-11/16	15/16	15/16	5/8	1/2	5/8	1
360	2- 3/4	15/16	15/16	5/8	1/2	5/8	1



Note: Weld 1, 3 and 4 use Electrode 1. See 4-AB2-17  
Weld 2 use Electrode 2. See 4-AB2-17.



SECTION c-c  
(See 4-AB2-18)  
① Weld 5 or 7; see 4-AB2-18

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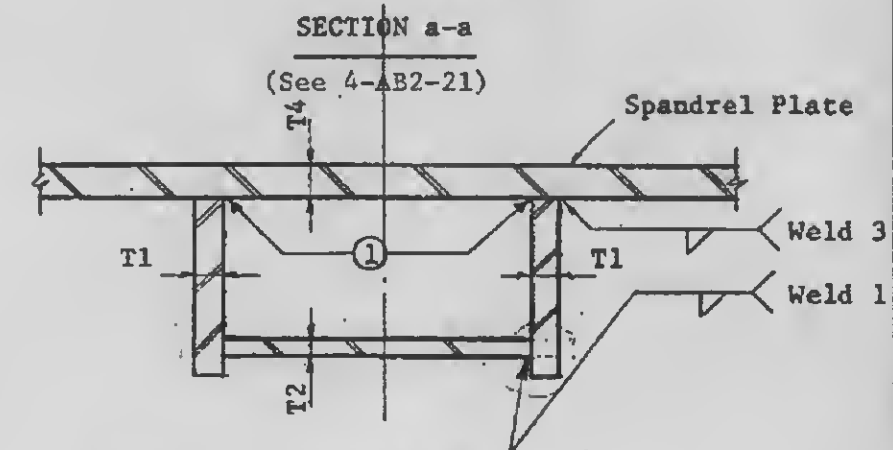
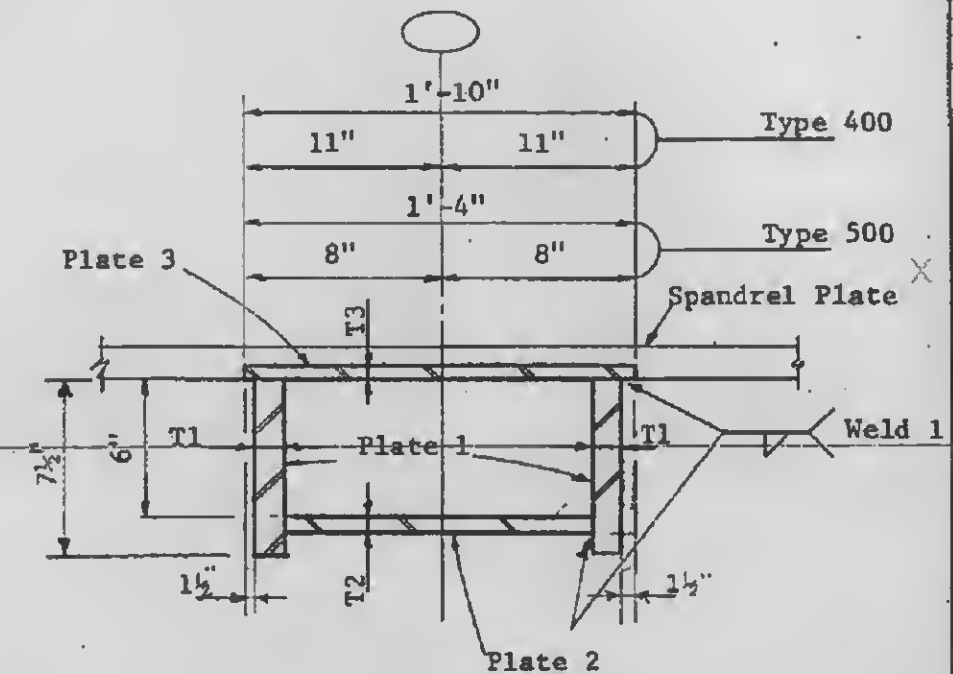
TITLE EXTERIOR WALL - COLUMN TYPES 400 AND 500

DATE 6-5-67

REVISIONS

7-28-67

COLUMN TYPE	PLATE 1 T1 (IN)	PLATE 2 T2 (IN)	PLATE 3 T2 (IN)	WELD 1 IN	WELD 3 IN
430	7/8	5/16	5/16	1/2	1/2
431	15/16	5/16	5/16	1/2	1/2
432	1	3/8	3/8	1/2	1/2
433	1- 1/16	3/8	3/8	1/2	1/2
442	1- 5/8	9/16	9/16	1/2	1/2
443	1-11/16	9/16	9/16	1/2	1/2
444	1- 3/4	5/8	5/8	1/2	1/2
445	1-13/16	5/8	5/8	5/8	5/8
520	1/4	1/4	1/4	1/4	5/16
521	5/16	1/4	1/4	5/16	5/16
522	3/8	1/4	1/4	5/16	5/16
523	7/16	1/4	1/4	3/8	3/8
524	1/2	1/4	1/4	3/8	3/8
525	9/16	1/4	1/4	3/8	3/8
526	5/8	1/4	1/4	3/8	3/8
527	11/16	1/4	1/4	3/8	3/8
528	3/4	1/4	1/4	3/8	3/8
529	13/16	5/16	5/16	1/2	1/2
530	7/8	5/16	5/16	1/2	1/2
531	15/16	5/16	5/16	1/2	1/2
532	1	3/8	3/8	1/2	1/2
533	1- 1/16	3/8	3/8	1/2	1/2
534	1- 1/8	3/8	3/8	1/2	1/2
535	1- 3/16	7/16	7/16	1/2	1/2
536	1- 1/4	7/16	7/16	1/2	1/2
537	1- 5/16	7/16	7/16	1/2	1/2
538	1- 3/8	1/2	1/2	1/2	1/2
539	1- 7/16	1/2	1/2	1/2	1/2
540	1- 1/2	1/2	1/2	1/2	1/2
541	1- 9/16	9/16	9/16	1/2	1/2
542	1- 5/8	9/16	9/16	1/2	1/2
543	1-11/16	9/16	9/16	1/2	1/2
544	1- 3/4	5/8	5/8	1/2	1/2
545	1-13/16	5/8	5/8	5/8	5/8
546	1- 7/8	5/8	5/8	5/8	5/8
547	1-15/16	11/16	11/16	5/8	5/8
548	2	11/16	11/16	5/8	5/8
549	2- 1/16	11/16	11/16	5/8	5/8
550	2- 1/8	3/4	3/4	5/8	5/8
551	2- 3/16	3/4	3/4	5/8	5/8
552	2- 1/4	3/4	3/4	5/8	5/8
553	2- 5/16	13/16	13/16	5/8	5/8
554	2- 3/8	13/16	13/16	5/8	5/8
555	2- 7/16	13/16	13/16	5/8	5/8
556	2- 1/2	7/8	7/8	5/8	5/8
557	2- 9/16	7/8	7/8	5/8	5/8
558	2- 5/8	7/8	7/8	5/8	5/8



① Weld 5 or 7; see 4-AB2-21

SECTION b-b  
(See 4-AB2-21)

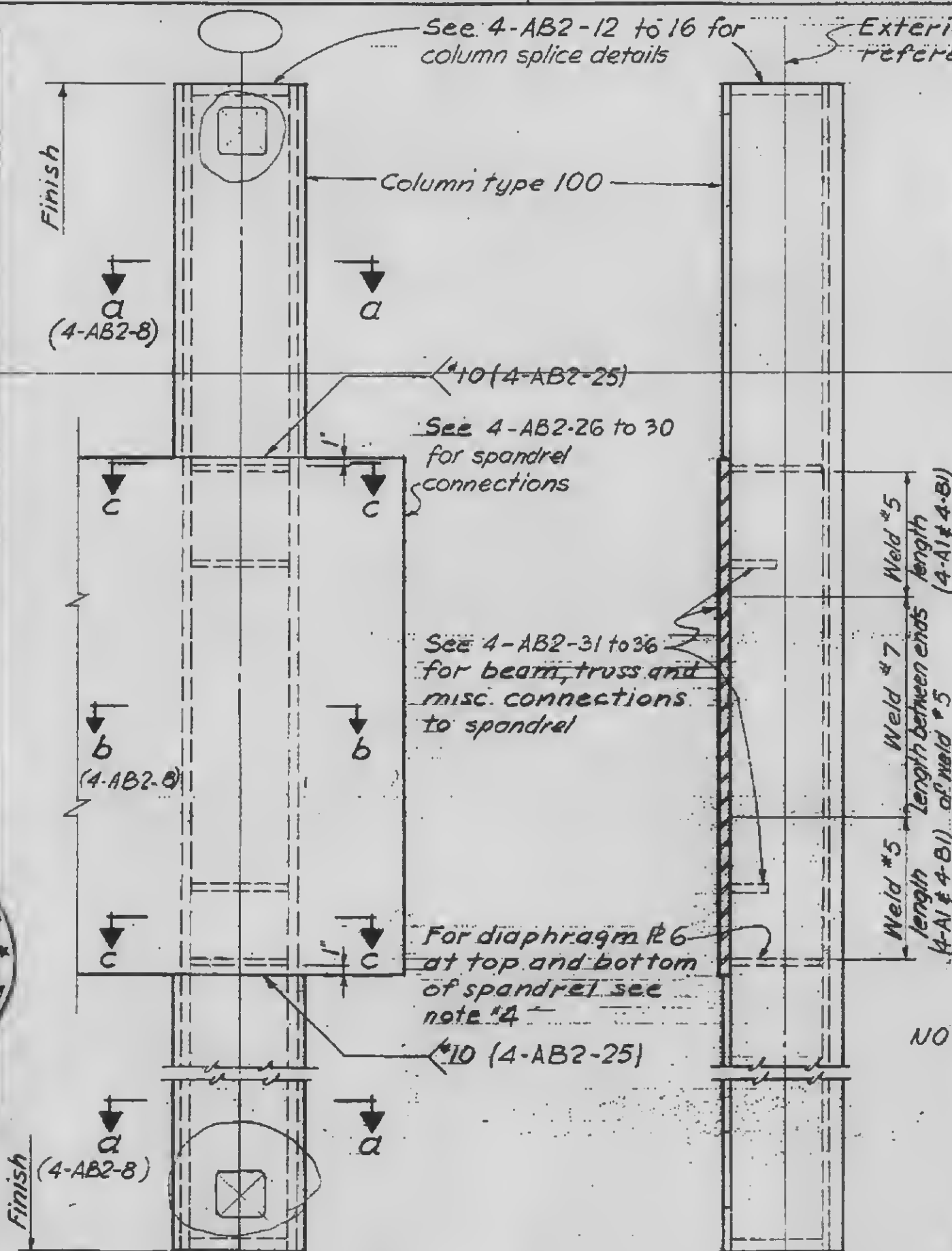
Note: Weld 1 and 3 use Electrode 1. See 4-AB2-17



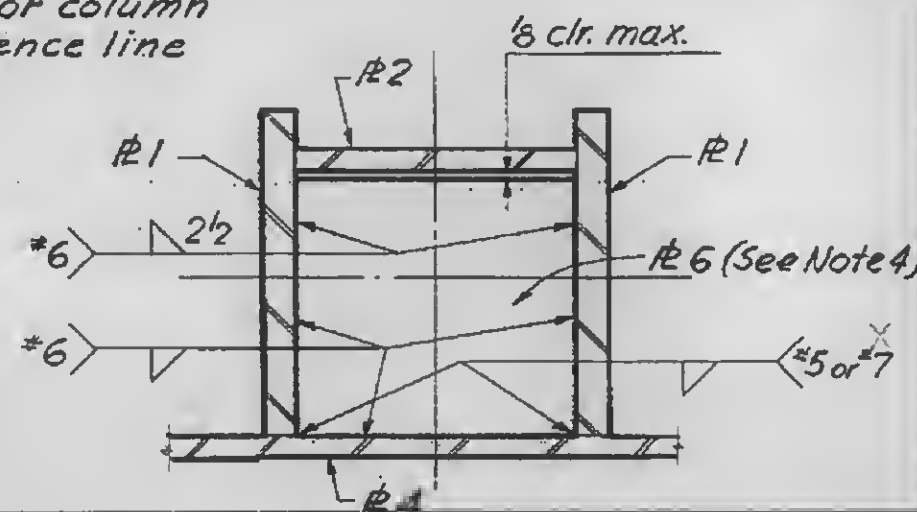


REVISIONS

11-7-67  
3-16-70



Exterior column reference line



Section C-C

- NOTES
1. See 4-AB2-8 for R's 1, 2 and 3
  2. See 4-A1 & 4-B1 for R 4 and welds #5, #6 & #7
  3. Electrodes for welds #5, #6 & #7 shall be Electrode 1. See 4-AB2-17
  4. Fy of R6 to match Fy of R1. Thickness of R6 to be as shown:

Weld #6	R 6
1 4	3 8
5 16	1 2
3 8	5 8
7 16	11 16
1 2	3 4
9 16	7 8
5 8	1
11 16	1-1 8

NOTE: Weld #5 & #7 required only where shown in 4-A1 & 4-B1

COMP. PEN.

WELD #10

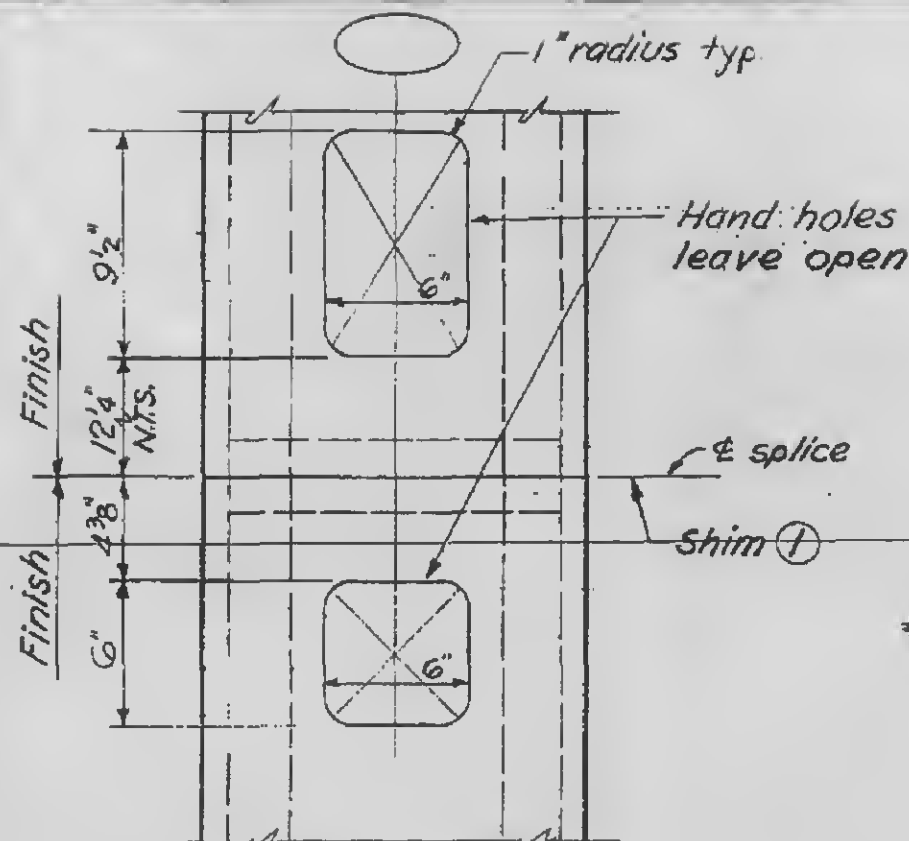


REVISIONS

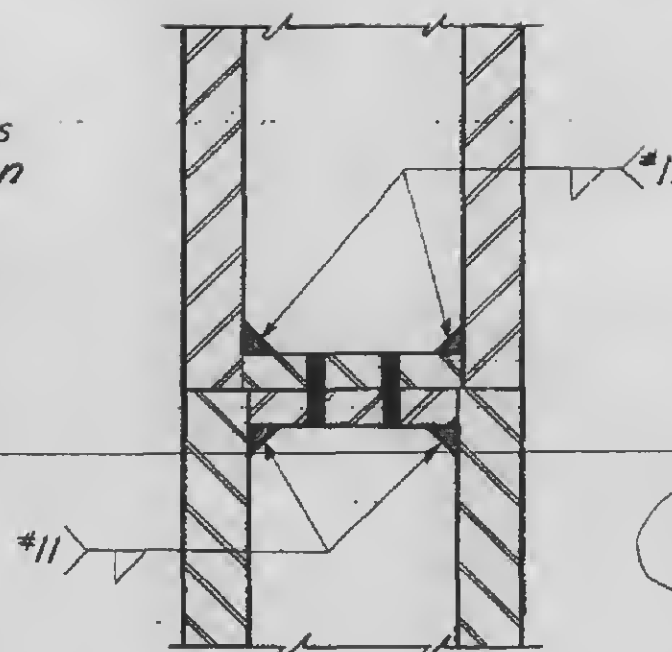
7-10-67

11-7-67

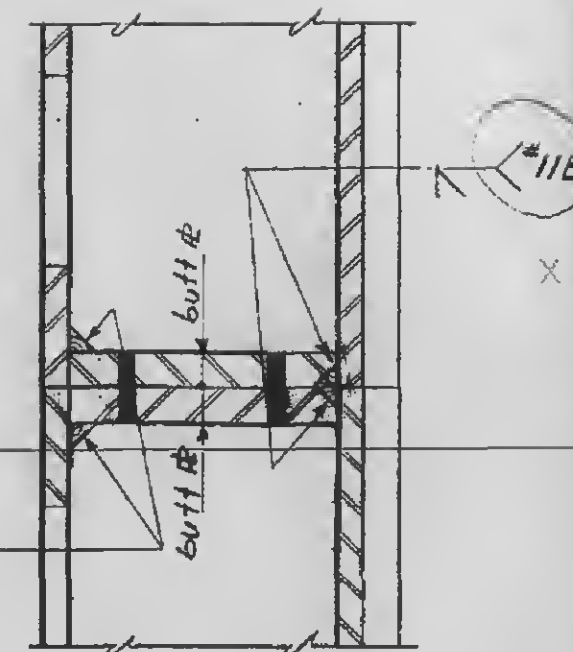
3-11-68



EXTERIOR ELEVATION

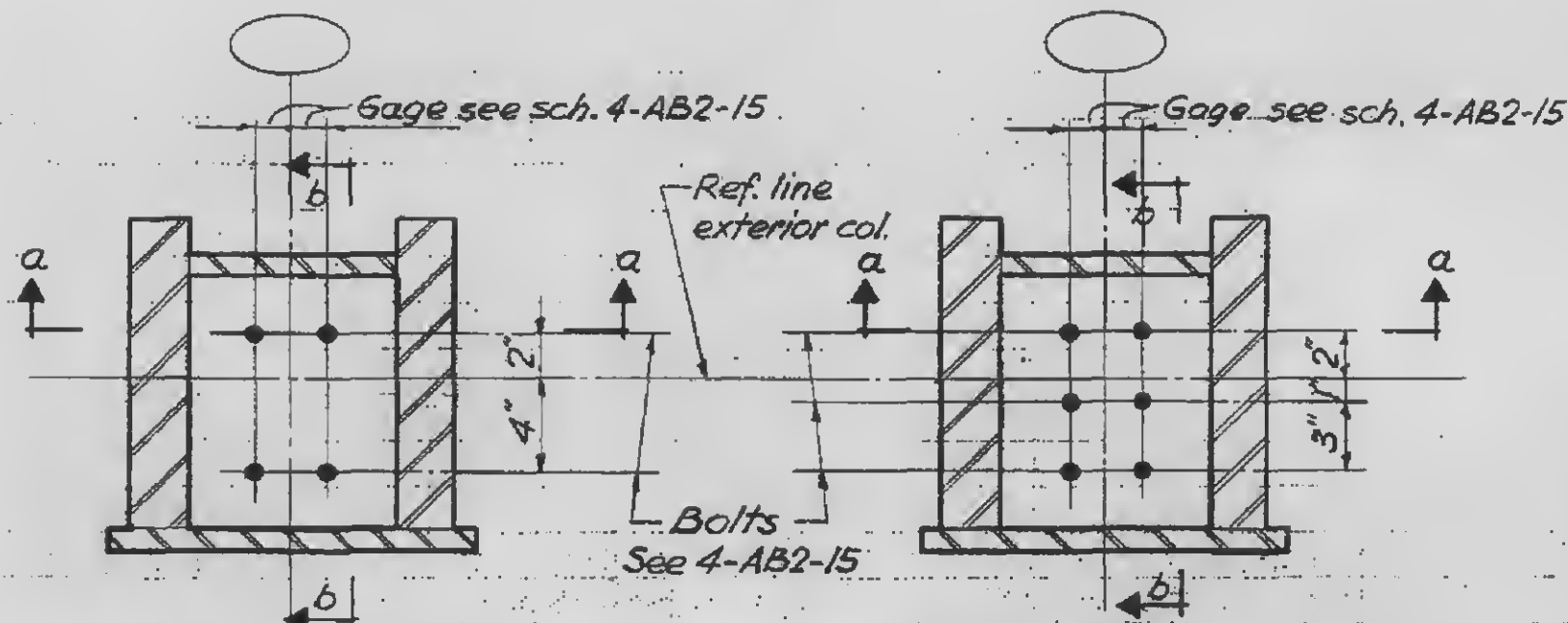


SECTION a-a



SECTION b-b

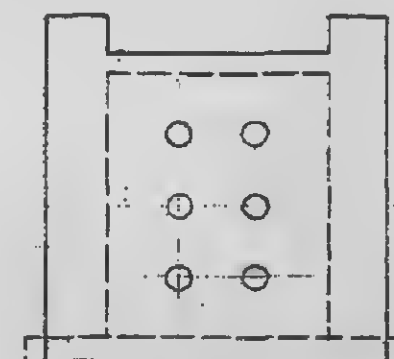
- ① Erector to supply shims of 18 ga. stock where required to maintain full bearing. Shim material to be ASTM A245, Grade D



COLUMN SPLICE 411-493

COLUMN SPLICE 681-693

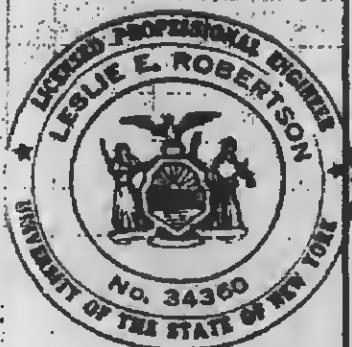
NOTE: For butt. #4 weld #11 see 4-AB2-15



PLAN OF SHIM

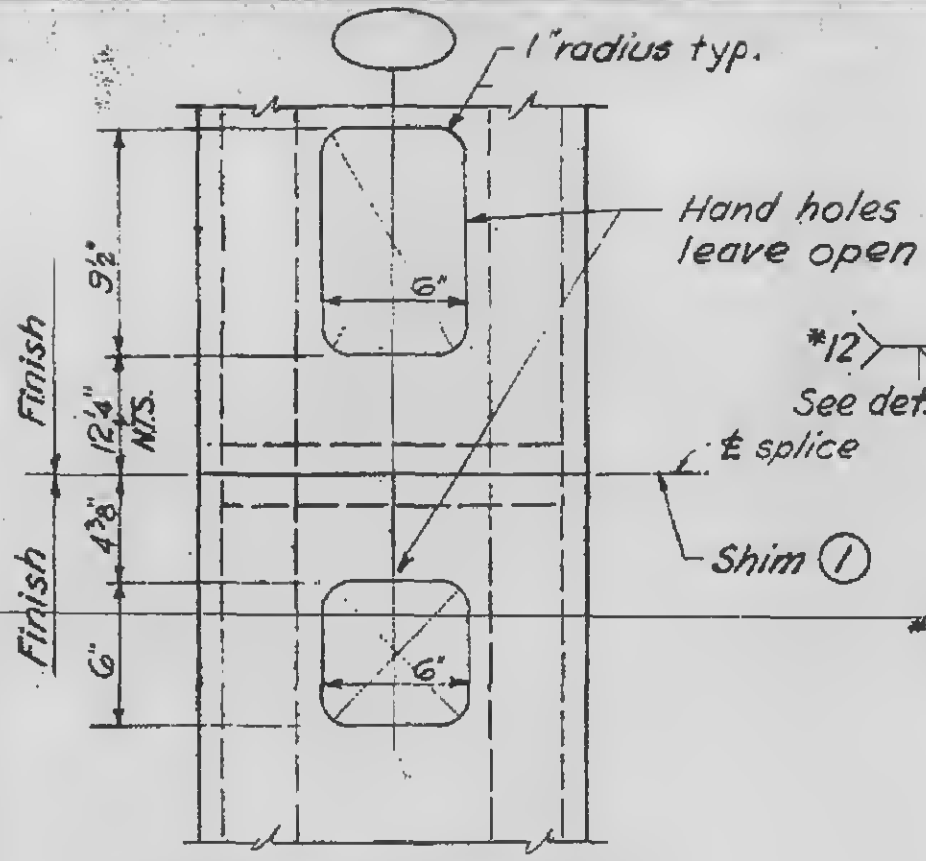
Holes 1/4 larger than scheduled bolts

4-AB2-12

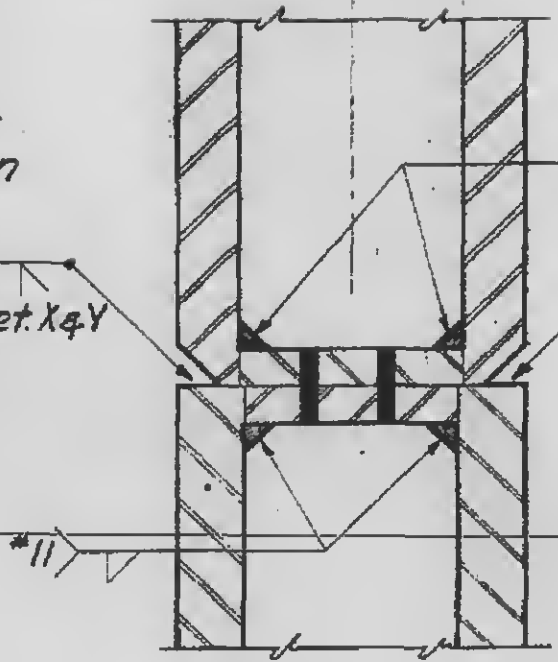


REVISIONS

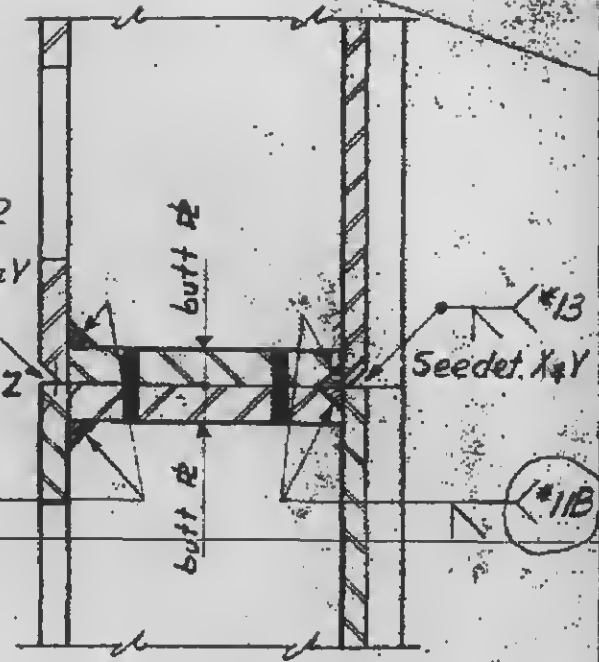
7-10-67  
11-7-67  
3-11-68



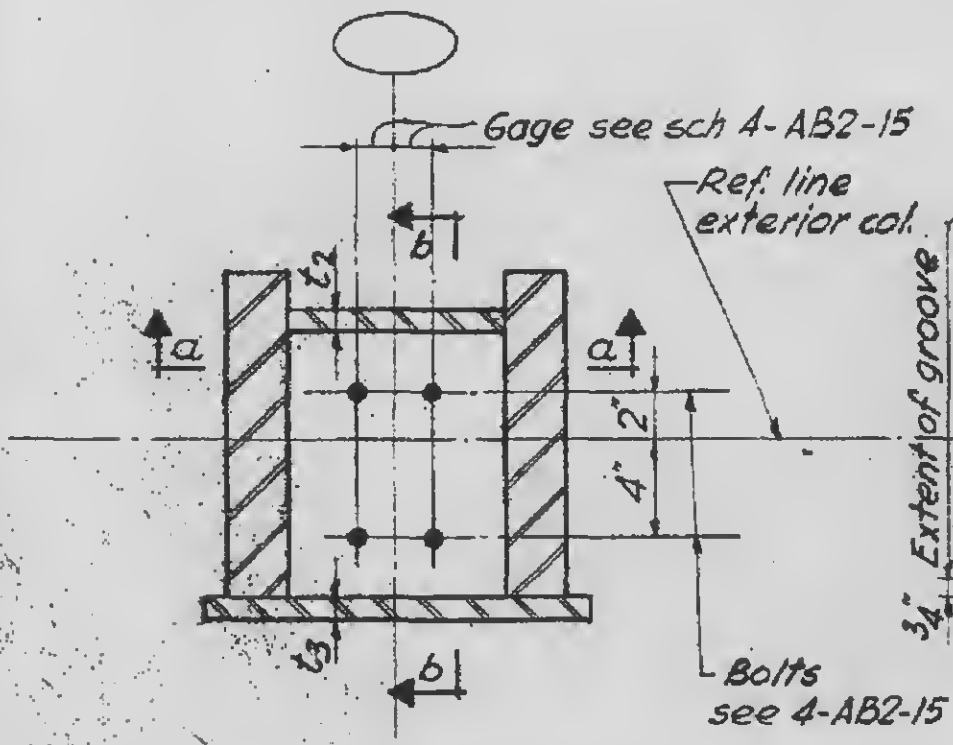
EXTERIOR ELEVATION



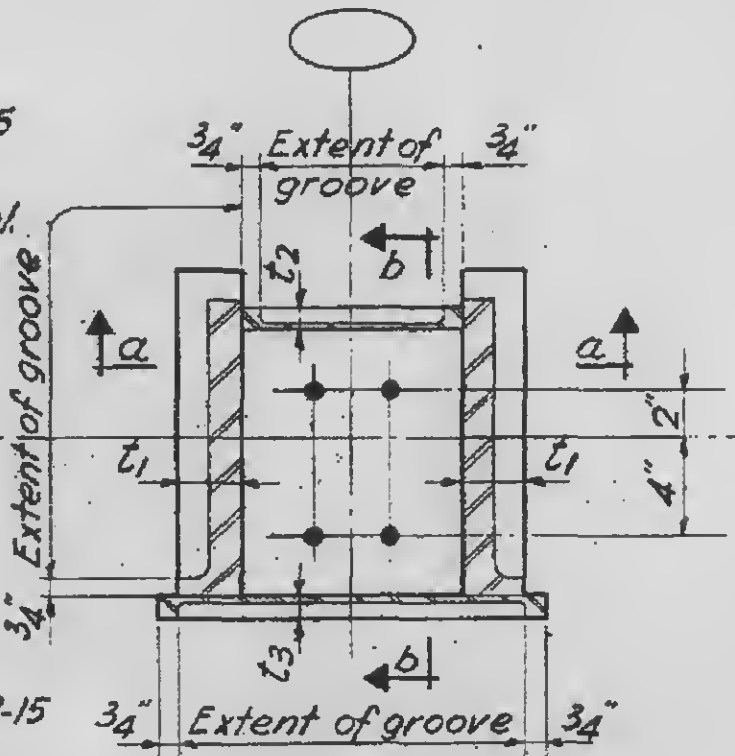
SECTION a-a



SECTION b-b



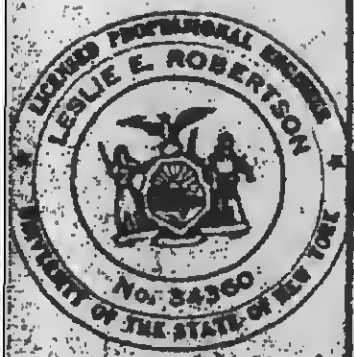
PLAN BELOW SPLICE



PLAN ABOVE SPLICE

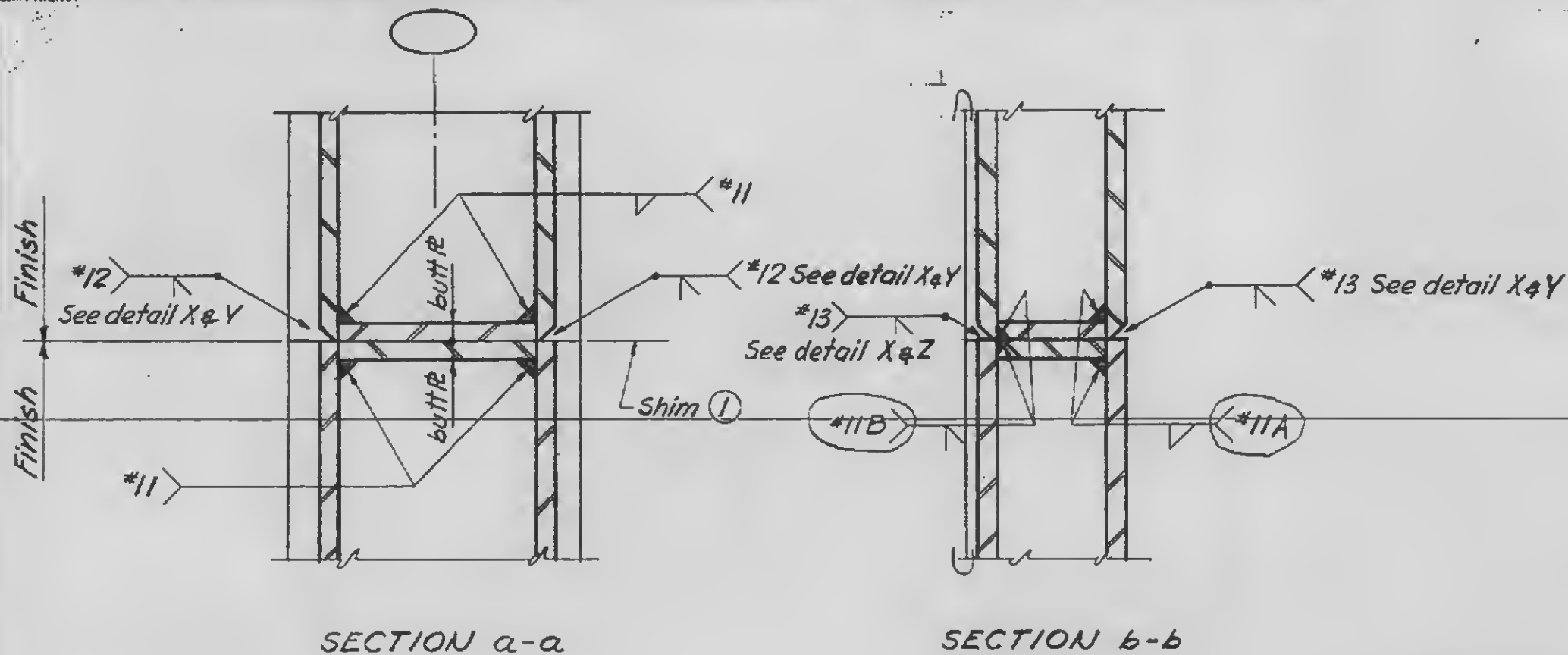
① Erector to supply shims of 18 ga. stock where required to maintain full bearing. Shim material to be ASTM A245, Grade D. For plan of shim see 4-AB2-12

For details X, Y, & Z, see 4-AB2-16  
For welds #11, #12 & #13, see 4-AB2-15  
For butt #2 see sch. 4-AB2-15

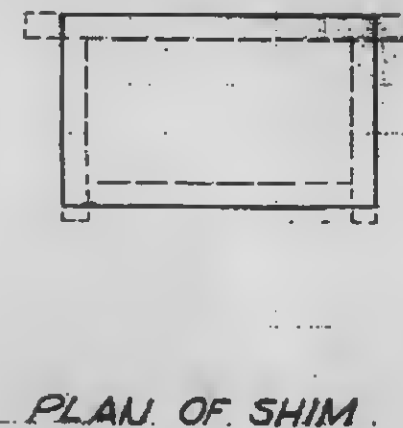
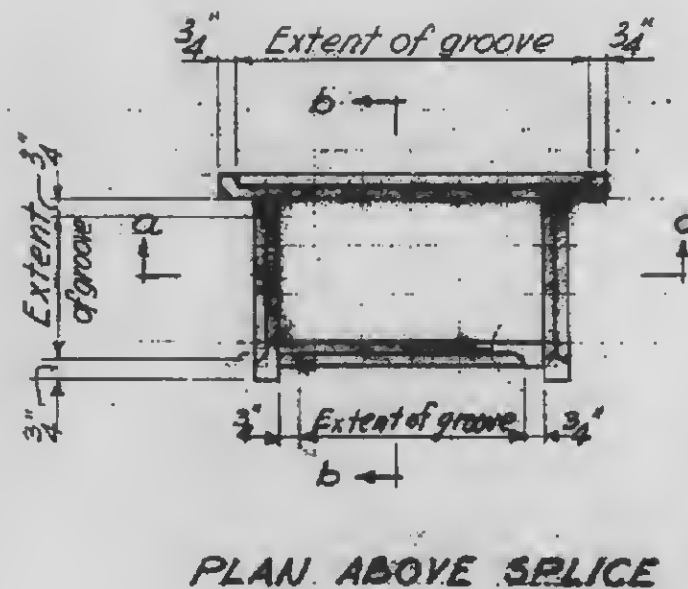
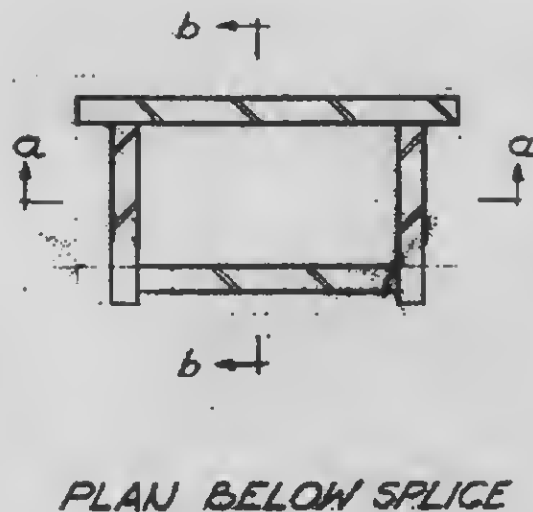


REVISIONS

7-28-67  
3-11-68



① Erector to supply shims of 18 ga. stock where required to maintain full bearing. Shim material to be ASTM A 245, Grade D.



For details X, Y & Z see 4-AB2-16  
For welds #11 #12 & #13 see 4-AB2-15  
For butt R see 4-AB2-15



## SKILLING, HELLE, CHRISTIANSEN, ROBERTSON

## Structural &amp; Civil Engineers

PROJECT WORLD TRADE CENTER

TITLE EXTERIOR WALL - COLUMN SPLICE SCHEDULE

DATE 6- 5-67

## REVISIONS

5-14-69

SPLICE DETAIL	BUTT PLATE FY 50	FILLET WELD NO 11	BOLTS				FIELD WELDS		FILLET WELD 11 A	GROOVE WELD 11 B
			NO	DIA	GRADE	GAGE	NO 12	NO 13		
101	1-3/8	5/16	4	7/8	A 325	3-1/2	3/4	3/8	5/16	5/16
102	1-3/8	5/16	4	7/8	A 325	2-1/2	1	1/2	5/16	5/16
103	1-3/8	5/16	4	7/8	A 325	1-1/2	1-1/2	3/4	5/16	5/16
111	2-3/8	11/16	4	1-1/8	A 490	3-1/2	3/4	3/8	1/2	1/2
112	2-3/8	11/16	4	1-1/8	A 490	2-1/2	1	1/2	9/16	1/2
113	2-3/8	11/16	4	1-1/8	A 490	1-1/2	1-1/2	3/4	3/4	9/16
121	1-3/8	5/16	-	-	-	-	3/4	3/8	5/16	5/16
122	1-3/8	5/16	-	-	-	-	1	1/2	5/16	5/16
123	1-3/8	5/16	-	-	-	-	1-1/2	3/4	5/16	5/16
411	1-3/8	5/16	4	7/8	A 325	3-1/2	-	-	5/16	5/16
412	1-3/8	5/16	4	7/8	A 325	2-1/2	-	-	5/16	5/16
413	1-3/8	5/16	4	7/8	A 325	1-1/2	-	-	5/16	5/16
414	1-5/8	3/8	4	7/8	A 325	3-1/2	-	-	3/8	3/8
421	1-5/8	3/8	4	7/8	A 325	3-1/2	-	-	3/8	3/8
422	1-5/8	3/8	4	7/8	A 325	2-1/2	-	-	3/8	3/8
423	1-5/8	3/8	4	7/8	A 325	1-1/2	-	-	3/8	3/8
424	1-7/8	7/16	4	7/8	A 325	3-1/2	-	-	3/8	7/16
431	1-7/8	7/16	4	1	A 325	3-1/2	-	-	3/8	7/16
432	1-7/8	7/16	4	1	A 325	2-1/2	-	-	3/8	7/16
433	1-7/8	7/16	4	1	A 325	1-1/2	-	-	7/16	7/16
434	2-1/8	1/2	4	1	A 325	3-1/2	-	-	3/8	7/16
441	2-1/8	1/2	4	1-1/8	A 325	3-1/2	-	-	3/8	7/16
442	2-1/8	1/2	4	1-1/8	A 325	2-1/2	-	-	7/16	7/16
443	2-1/8	1/2	4	1-1/8	A 325	1-1/2	-	-	9/16	1/2
444	2-3/8	11/16	4	1-1/8	A 325	3-1/2	-	-	1/2	1/2
445	2-3/8	11/16	4	1-1/8	A 325	2-1/2	-	-	9/16	1/2
491	2-3/8	11/16	4	1-1/8	A 490	3-1/2	-	-	1/2	1/2
492	2-3/8	11/16	4	1-1/8	A 490	2-1/2	-	-	9/16	1/2
493	2-3/8	11/16	4	1-1/8	A 490	1-1/2	-	-	3/4	9/16
494	2-5/8	13/16	4	1-1/8	A 490	3-1/2	-	-	1/2	9/16
495	2-5/8	13/16	4	1-1/8	A 490	2-1/2	-	-	11/16	9/16
681	2-5/8	13/16	6	1	A 490	3-1/2	-	-	1/2	9/16
682	2-5/8	13/16	6	1	A 490	2-1/2	-	-	11/16	9/16
683	2-5/8	13/16	6	1	A 490	1-1/2	-	-	7/8	9/16
685	3	1	6	1	A 490	2-1/2	-	-	13/16	5/8
691	3	1	6	1-1/8	A 490	3-1/2	-	-	5/8	5/8
692	3	1	6	1-1/8	A 490	2-1/2	-	-	13/16	5/8
693	3	1	6	1-1/8	A 490	1-1/2	-	-	1- 1/8	11/16

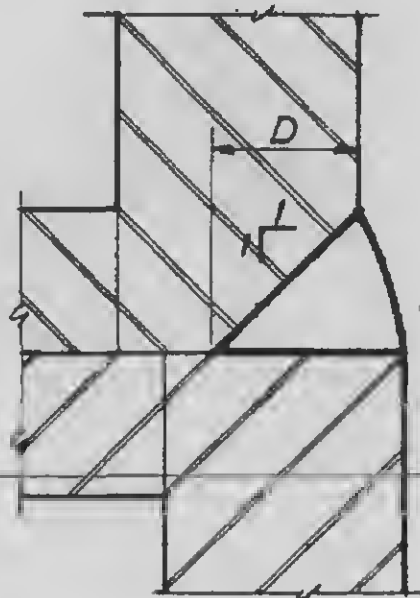
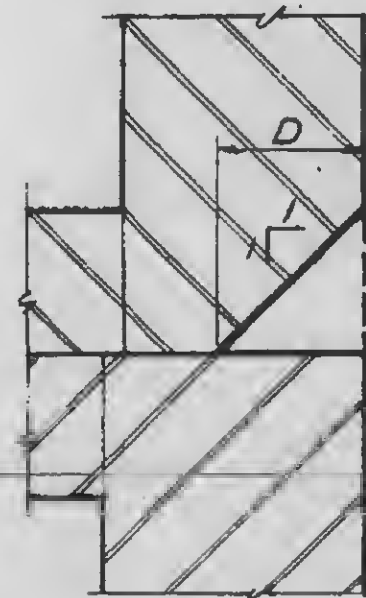
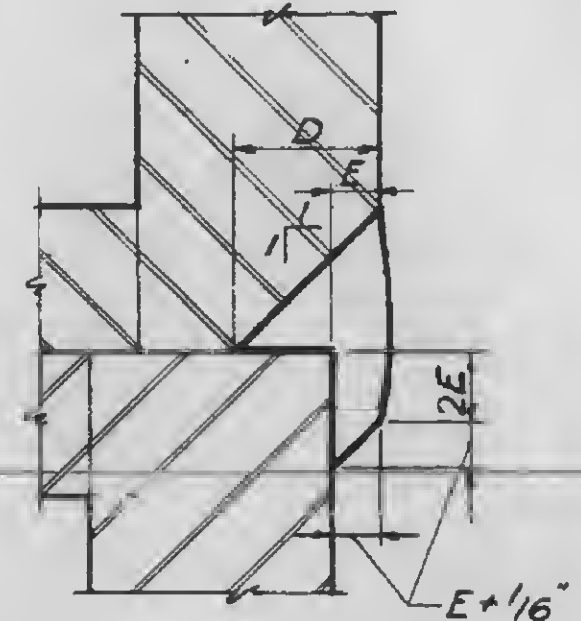
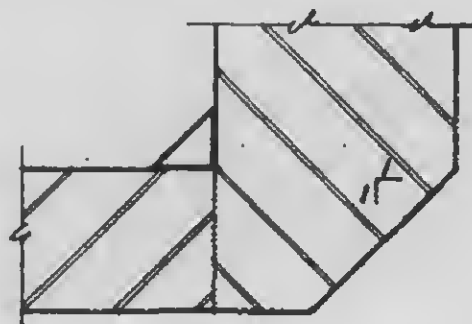
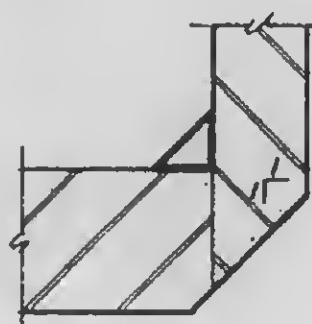
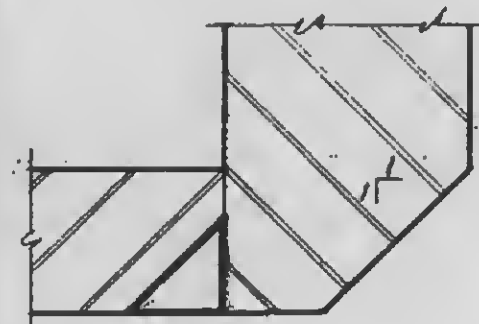
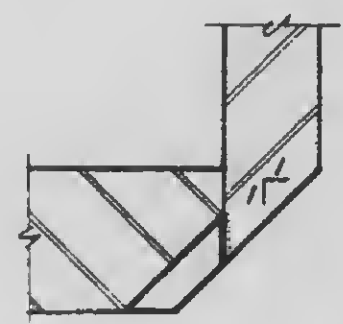
NOTE- BUTT PLATE THICKNESS IS NET AFTER FINISHING  
OPEN HOLES (1/4) INCH LARGER THAN BOLT DIAMETER





PROJECT THE WORLD TRADE CENTERTITLE EXTERIOR WALL - COLUMN SPLICE DETAILSDATE 6-5-67

REVISIONS

Case 1Case 2Case 3DETAIL XShowing field welding of welds #12 & #13*D = Scheduled weld size for  
weld #12 or #13*T1 or T2 > weld #12 or #13T1 or T2 < weld #12 or #13T3 > weld #13T3 < weld #13DETAIL YShowing edge preparation for weld #12 & #13DETAIL ZShowing edge preparation for weld #13

4-AB2-16





PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL — WELDING ELECTRODES

DATE 6-5-67

REVISIONS

FY GREATER THAN	FY EQUAL OR LESS THAN	ELECTRODE 1 (FY REF PL 1)			ELECTRODE 2 (FY REF PL 1)			(FY REF PL 3) ELECTRODE FOR WELD 10		
		ASTM SPEC	CLASS	SUBMERGED ARC WELDING	ASTM SPEC	CLASS	SUBMERGED ARC WELDING	ASTM SPEC	CLASS	SUBMERGED ARC WELDING
	36	A233	E 70XX	GRADE SAW-2	A233	E 70XX	GRADE SAW-1	A233	E 70XX	GRADE SAW-1
36	42	A233	E 70XX	GRADE SAW-2	A233	E 70XX	GRADE SAW-1	A233	E 70XX	GRADE SAW-1
42	50	A233	E 70XX	GRADE SAW-2	A233	E 70XX	GRADE SAW-1	A233	E 70XX	GRADE SAW-2
50	55	A233	E 70XX	NOTE 1	A233	E 70XX	NOTE 1	A233	E 70XX	NOTE 1
55	60	A316	E 80XX	NOTE 1	A233	E 70XX	NOTE 1	A233	E 70XX	NOTE 1
60	65	A316	E 80XX	NOTE 1	A233	E 70XX	NOTE 1	A316	E 80XX	NOTE 1
65	70	A316	E 80XX	NOTE 1	A233	E 70XX	NOTE 1	A316	E 80XX	NOTE 1
70	80	A316	E 90XX	NOTE 1	A316	E 80XX	NOTE 1	A316	E 90XX	NOTE 1
80	90	A316	E100XX	NOTE 1	A316	E 90XX	NOTE 1	A316	E100XX	NOTE 1
90	100	A316	E110XX	NOTE 1	A316	E100XX	NOTE 1	A316	E110XX	NOTE 1

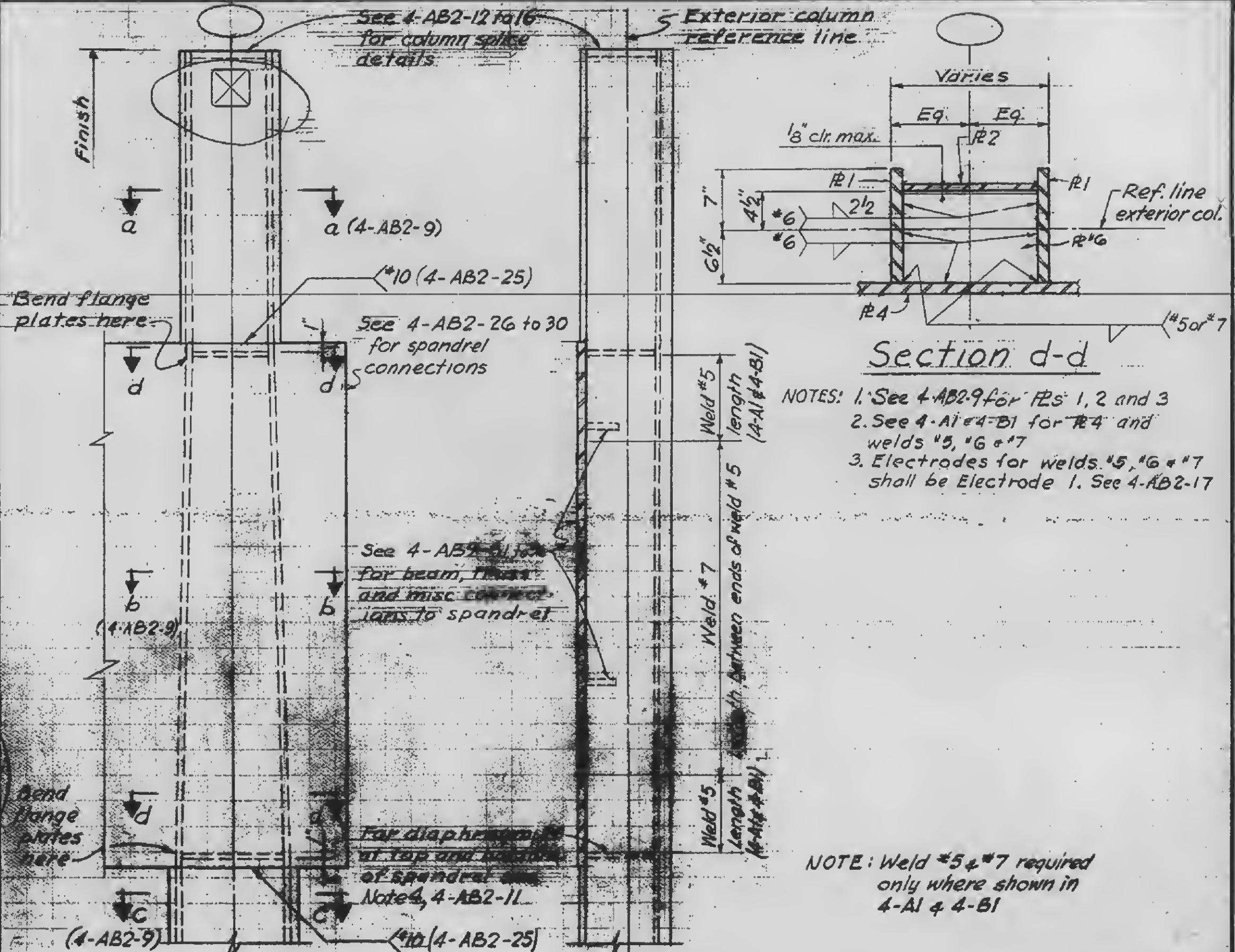
NOTES 1 SUBMERGED ARC WELDING SHALL CONFORM TO THE SPECIFICATIONS

2 LOW HYDROGEN ELECTRODES SHALL BE USED FOR ALL MANUAL ARC WELDING



REVISIONS

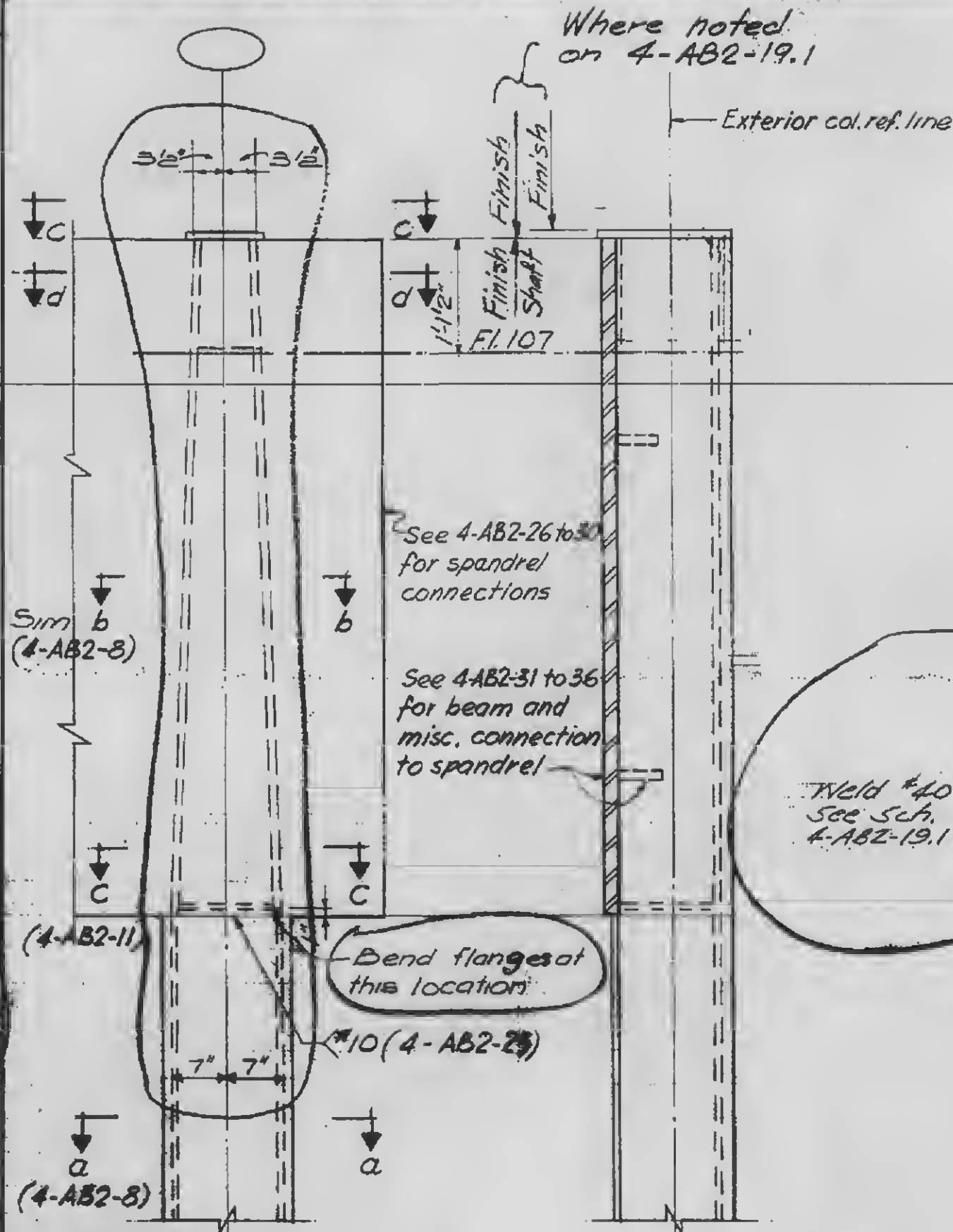
11-7-67



REVISIONS

7-18-69

3-16-70



Sim b  
(4-AB2-8)

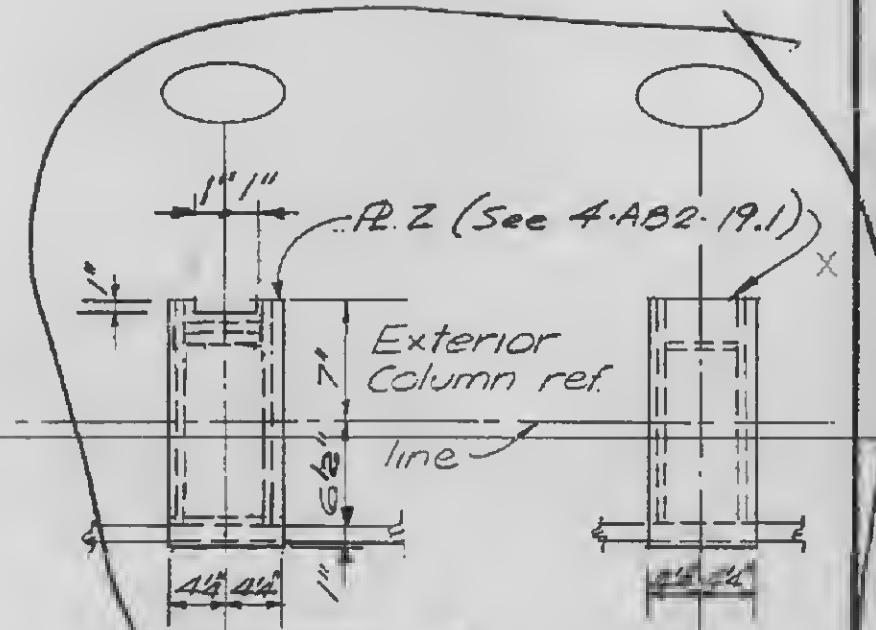
b

(4-AB2-11)

a  
(4-AB2-8)

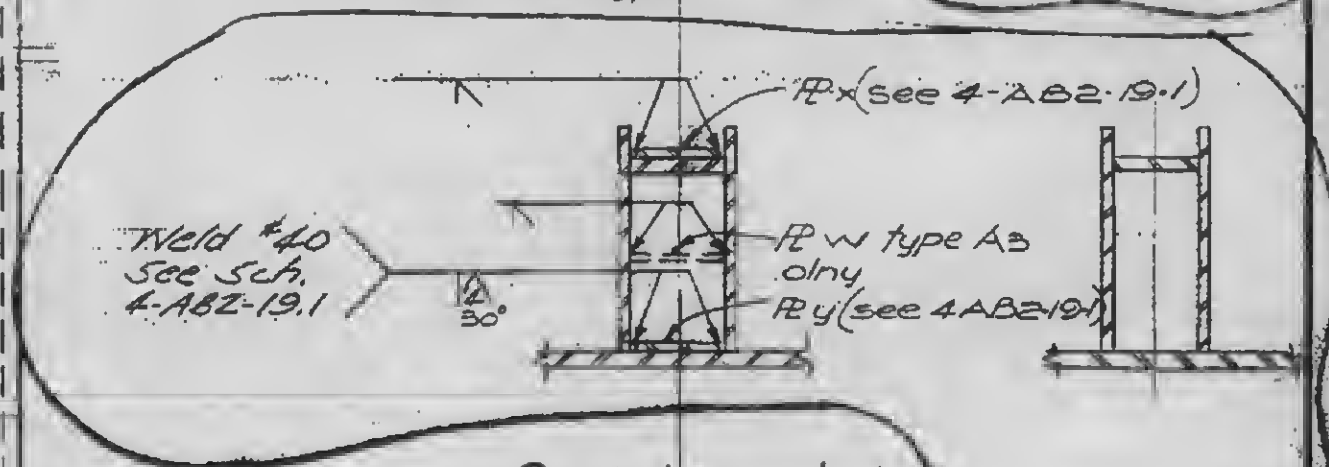
Elevation  
typical

(COLUMN TYPE 120)



Section c-c at WF & type A & B

Section c-c at 7x5 tubes



Section d-d at WF & type A & B

Section d-d at 7x5 tubes



PROJECT

THE WORLD TRADE CENTER

TITLE

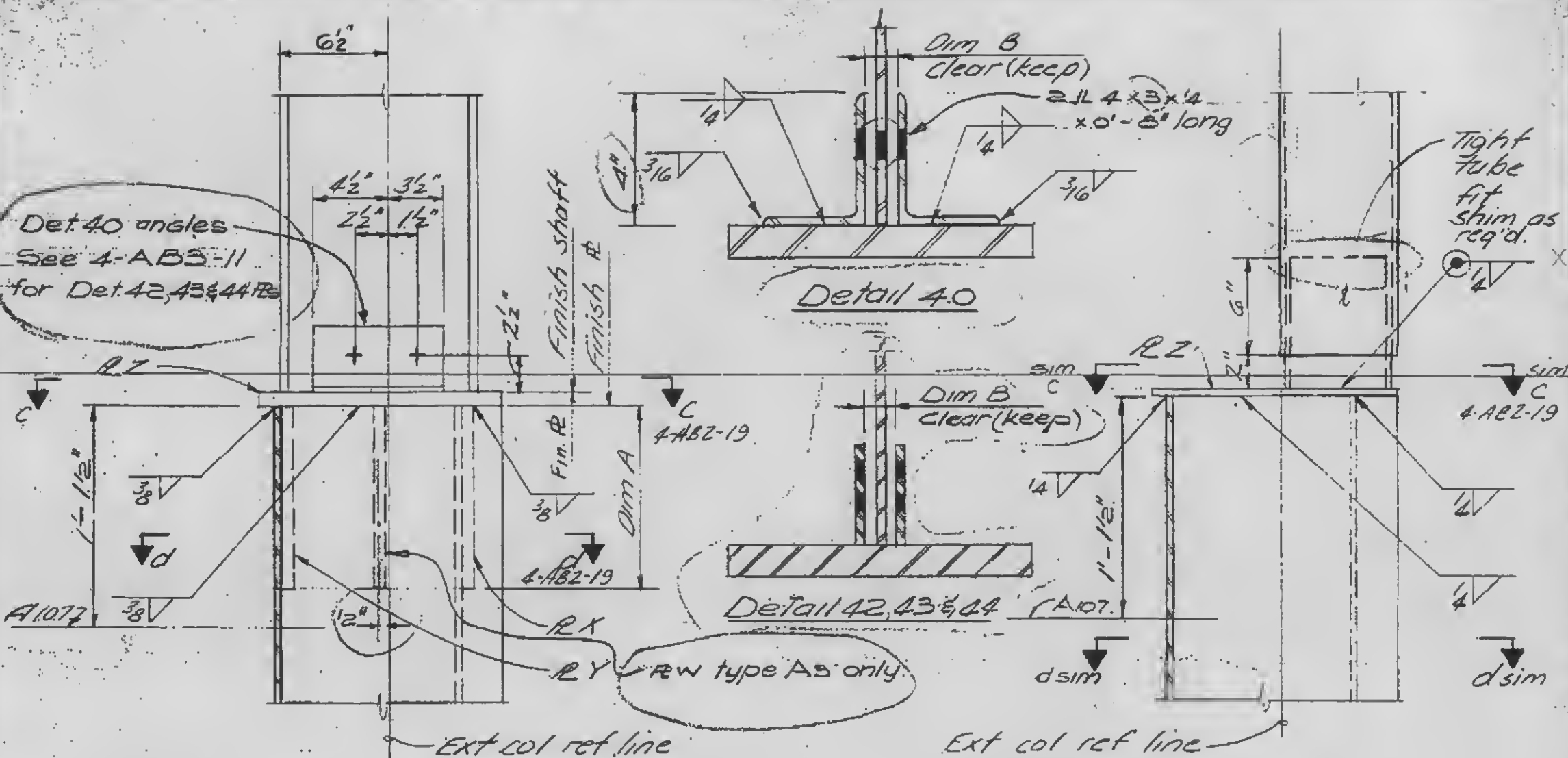
EXTERIOR WALL - DETAIL 3

DATE

8-15-69

REVISIONS

3-16-70



See 4-A3-2 & 4-B3-2 for location of columns

Col. type	R X	R Y	R Z*	Dim A	Dim B	Weld #40	R.W.
7x5 tube	-	-	1"	-	-	-	-
12WF40-SQ	3/4"	3/4"	1"	1'-0"	1/2'	3/4	-
Type A1 & A4	3/4"	1"	1"	1'-6"	5/8"	3/4	-
Type A2	3/4"	1/2"	1 1/2"	1'-6"	7/8"	7/8	-
Type A3	3/4"	2"	1 1/2"	2'-0"	4"	1	1"
Type B1	3/4"	1"	1"	1'-6"	5/8"	3/4	-
Type B2 & B3	3/4"	1/2"	1 1/2"	1'-6"	7/8"	7/8	-

\* Finished thickness

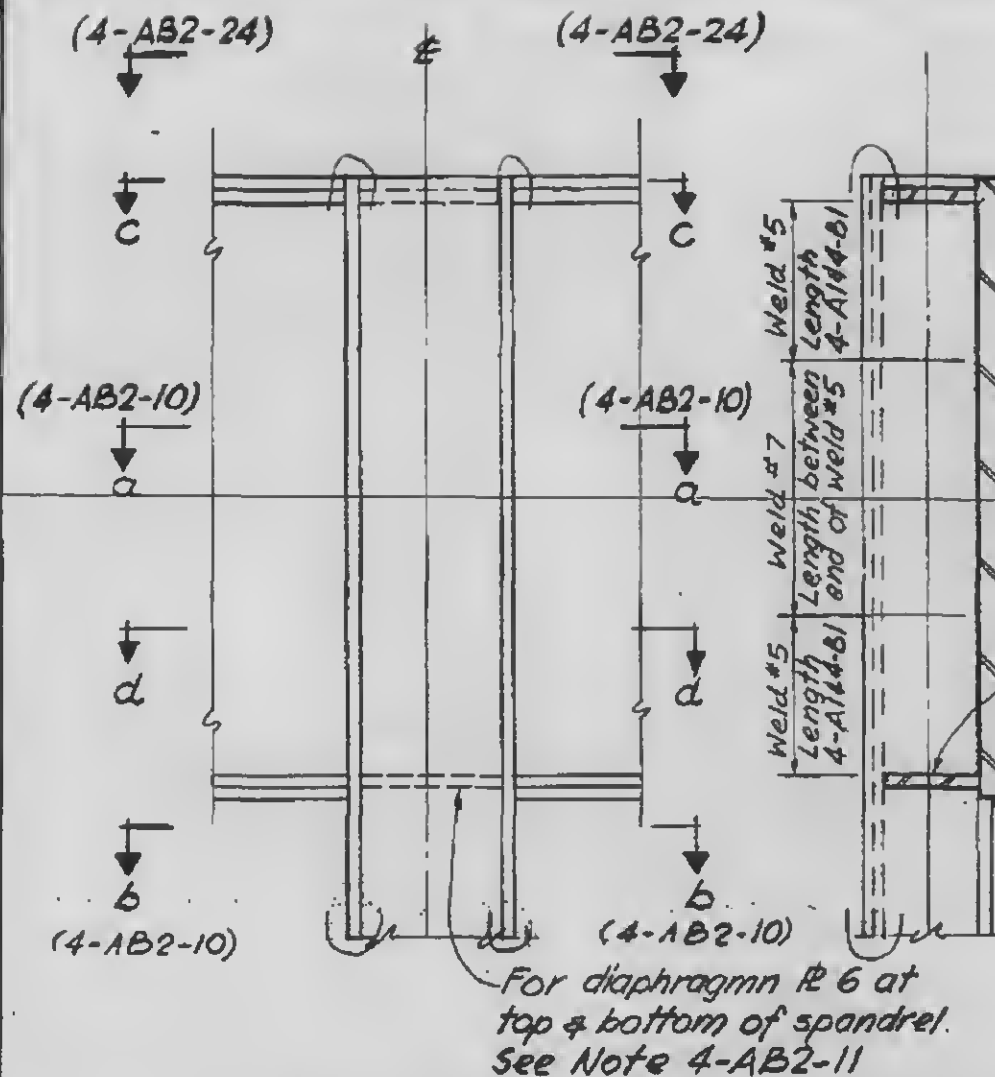
## Notes:

1. Plates X, Y & Z shall be  $F_y = 42 \text{ ksi}$ .
2. Welding shall be accomplished using E70XX low hydrogen electrodes.
3. See 4-A3-2 & 4-B3-2 for location of columns.
4. See 4-AB3-11 for Details 40, 42, 43 & 44.

4-AB2-19.1

REVISIONS

7-28-67



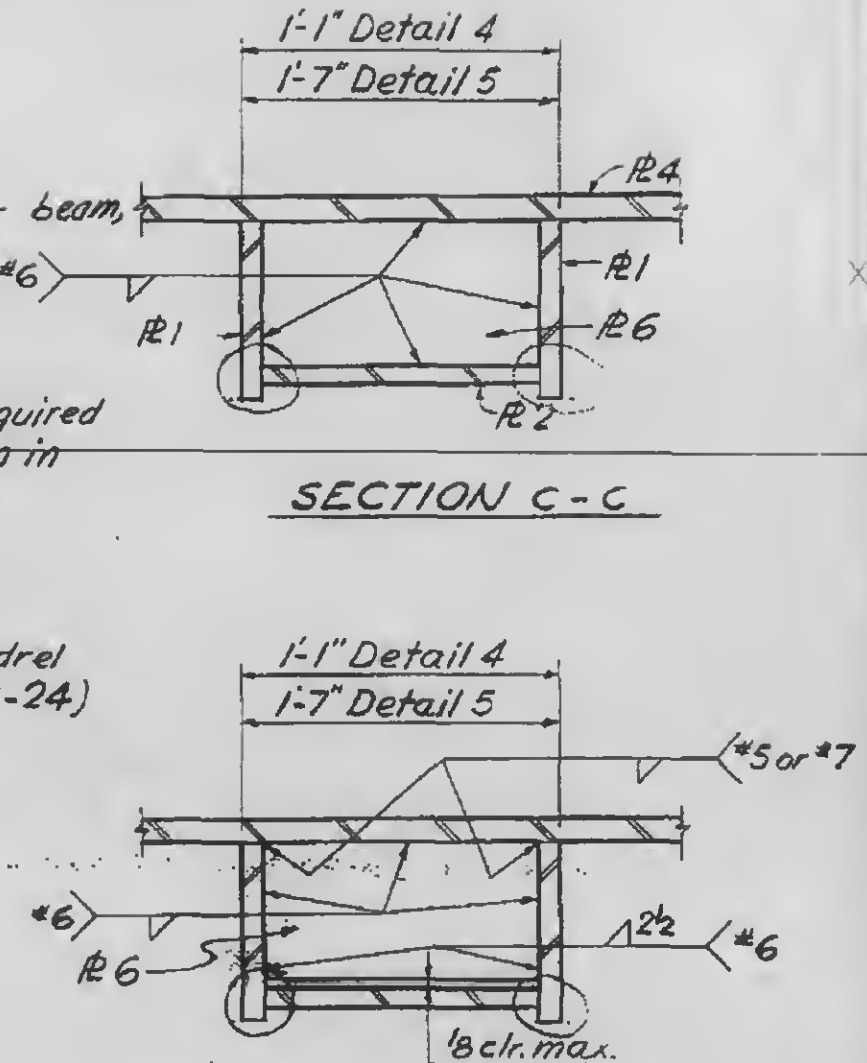
ELEVATION

SECTION X-X

See 4-AB2-31 to 36 for beam, truss and misc. connect. #6

NOTE: Welds #5 & #7 required only where shown in 4-A1 and 4-B1

For Plate at top and bottom of spandrel see Detail 8 (4-AB2-24)



- NOTES
1. Detail 4 applies to columns of type 500  
Detail 5 applies to columns of type 400
  2. See 4-AB2-10 for #s 1, 2 & 3 and welds #1, #2 & #3.
  3. See 4-A1 & 4-B1 for welds #5, #6 & #7, and #4
  4. Electrodes for welds #5, #6 & #7 shall be Electrodes 1. See 4-AB2-17



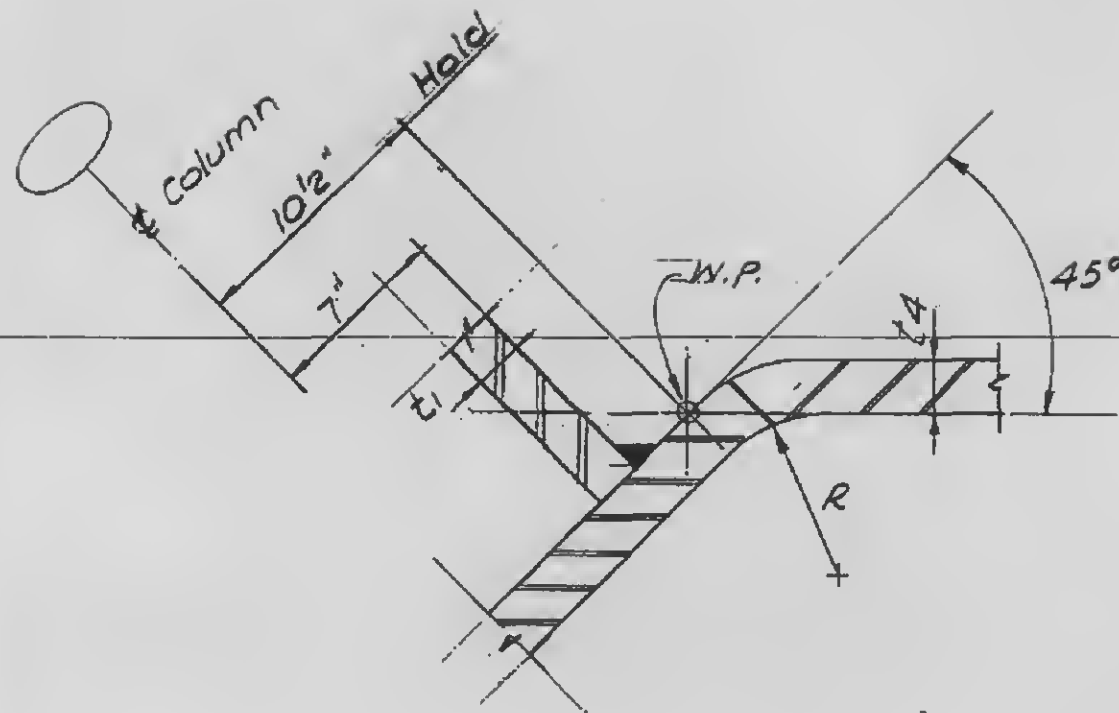


PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - DETAIL 6

DATE 6-5-67

REVISIONS



YIELD POINT OF SPANDREL	t4	R
36 KSI	3/8 - 1/2	t4 x 1/2
	9/16 - 1	t4 x 2
	1 1/16 - 2	t4 x 2 1/2
42 - 50 KSI	3/8 - 1/2	t4 x 3
	9/16 - 1	t4 x 5
	1 1/16 - 2	t4 x 5
55 - 60 KSI	3/8 - 1/2	t4 x 3 1/2
	9/16 - 1	t4 x 5
	1 1/16 - 2	t4 x 5
65 - 100 KSI	3/8 - 1/2	t4 x 5
	9/16 - 1	t4 x 5
	1 1/16 - 2	t4 x 5





PROJECT

THE WORLD TRADE CENTER

TITLE

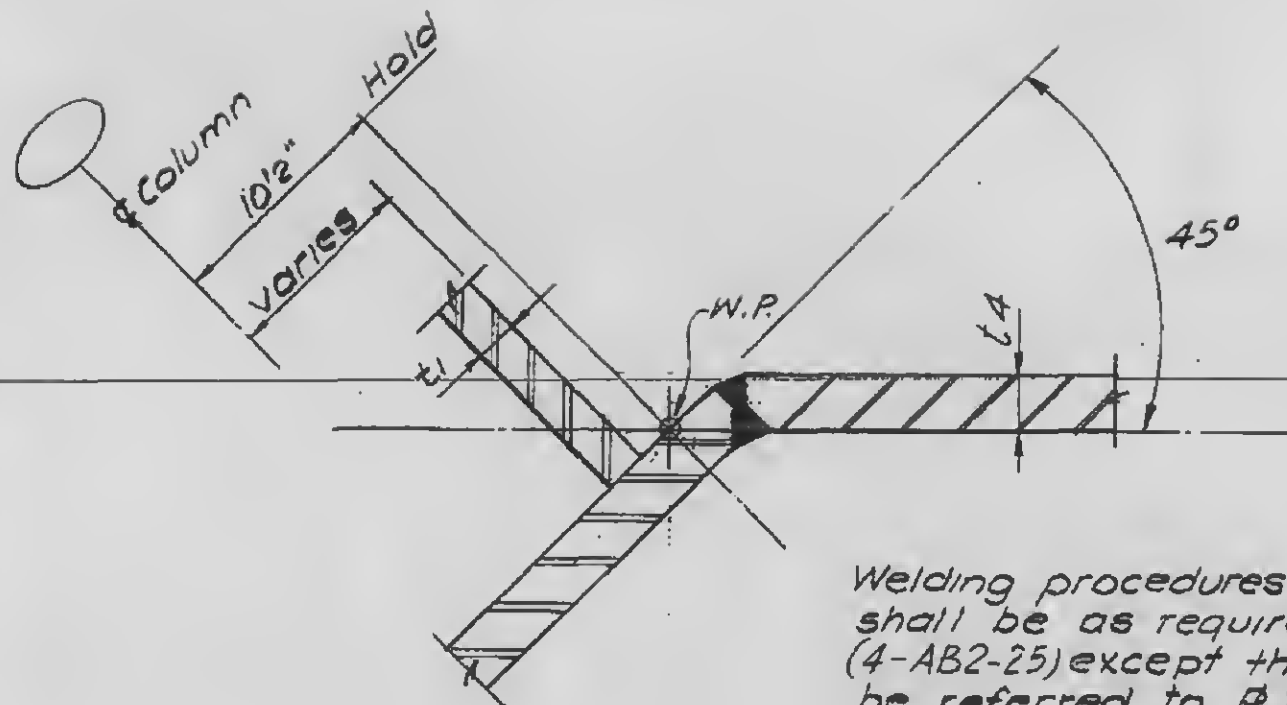
EXTERIOR WALL - DETAIL 7

DATE

6-5-67

REVISIONS

11-7-67



Welding procedures and electrodes shall be as required for Weld #10, (4-AB2-25) except that welds shall be referred to R #4 instead of R #3.

At fabricators option Detail 7 may be used in place of Detail 6.



PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL - DETAIL 8

DATE

6-5-67

REVISIONS

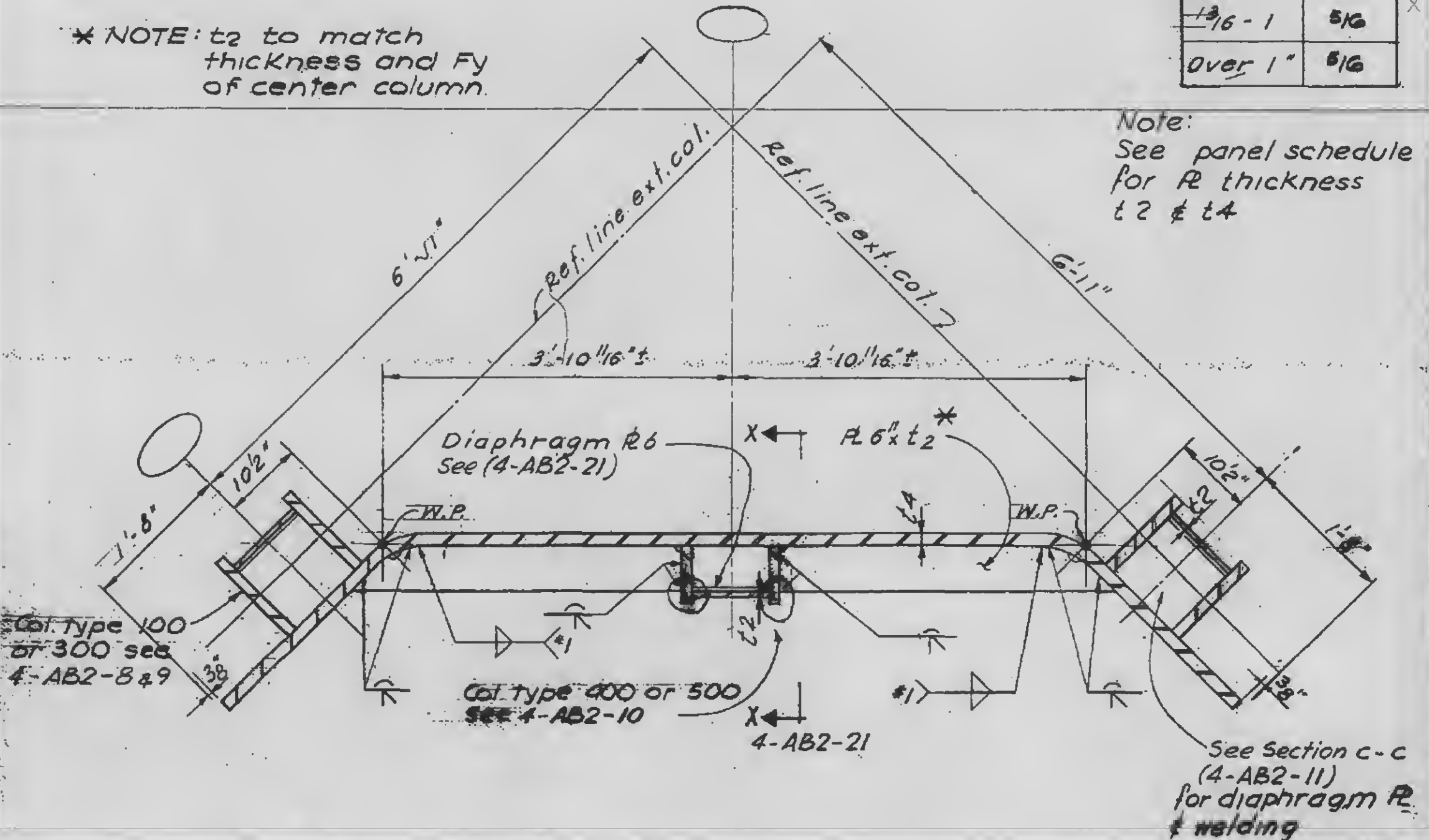
7-28-67

WELD SCHEDULE

t <sub>4</sub>	#1
1/4 - 5/16	3/16
3/8 - 7/16	3/16
1/2 - 3/4	1/4
13/16 - 1	5/16
Over 1"	5/16

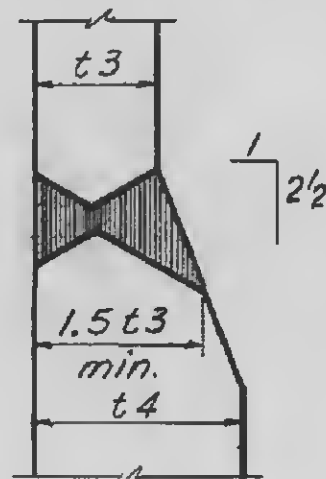
\* NOTE: t<sub>2</sub> to match thickness and F<sub>y</sub> of center column.

Note:  
See panel schedule for R thickness  
t<sub>2</sub> & t<sub>4</sub>



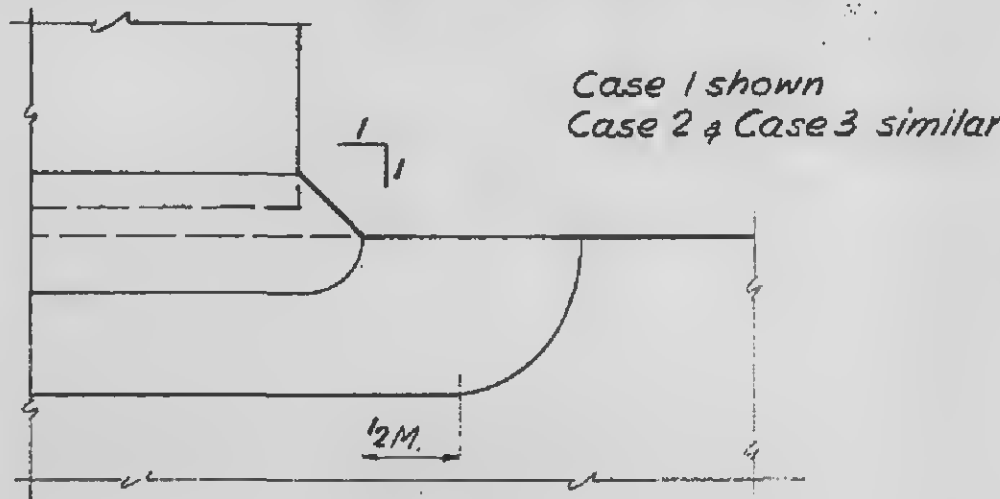
4-AB2-24

REVISIONS



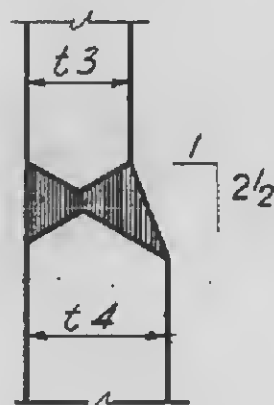
$$t_4 \geq 1.5 t_3, F_y \geq t_3 > F_y \geq t_4$$

Case 1



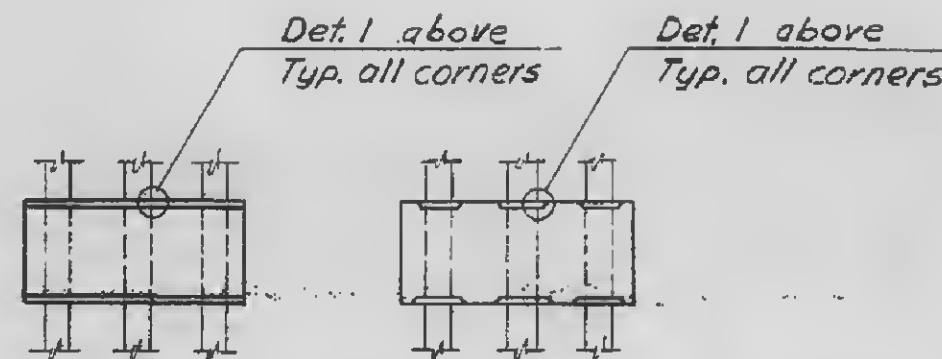
Case 1 shown  
Case 2 & Case 3 similar

DETAIL 1

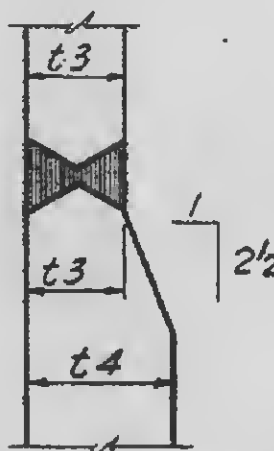


$$t_4 < 1.5 t_3, F_y \geq t_3 > F_y \geq t_4$$

Case 2



OPTIONAL METHODS OF PREPARING 2 1/2:1 BEVELS  
ON #4. BEVEL REQUIRED FOR Cases 1 & 3



$$t_4 > t_3, F_y \geq t_3 = F_y \geq t_4$$

Case 3

Welding procedures shall conform to the requirements of AWS D2.3 - 63 "Specification for Welded Highway and Railway Bridges."  
Low hydrogen electrodes shall be used throughout for manual arc welding.  
See dwg 4-AB2-17 for welding electrodes.

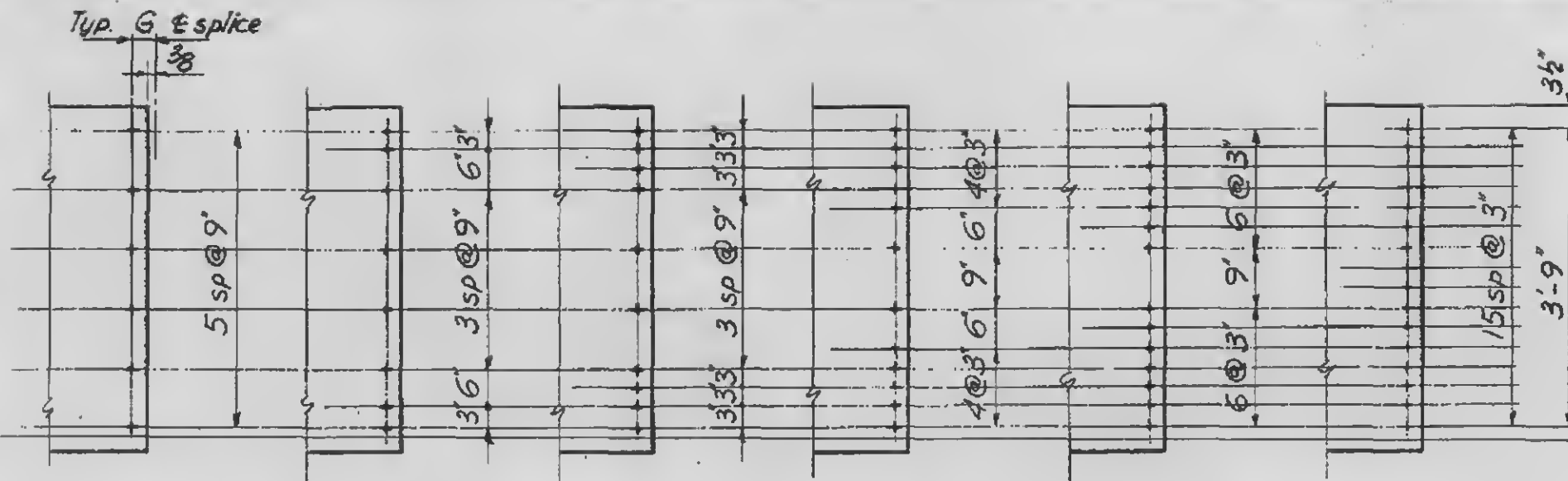


PROJECT **THE WORLD TRADE CENTER**

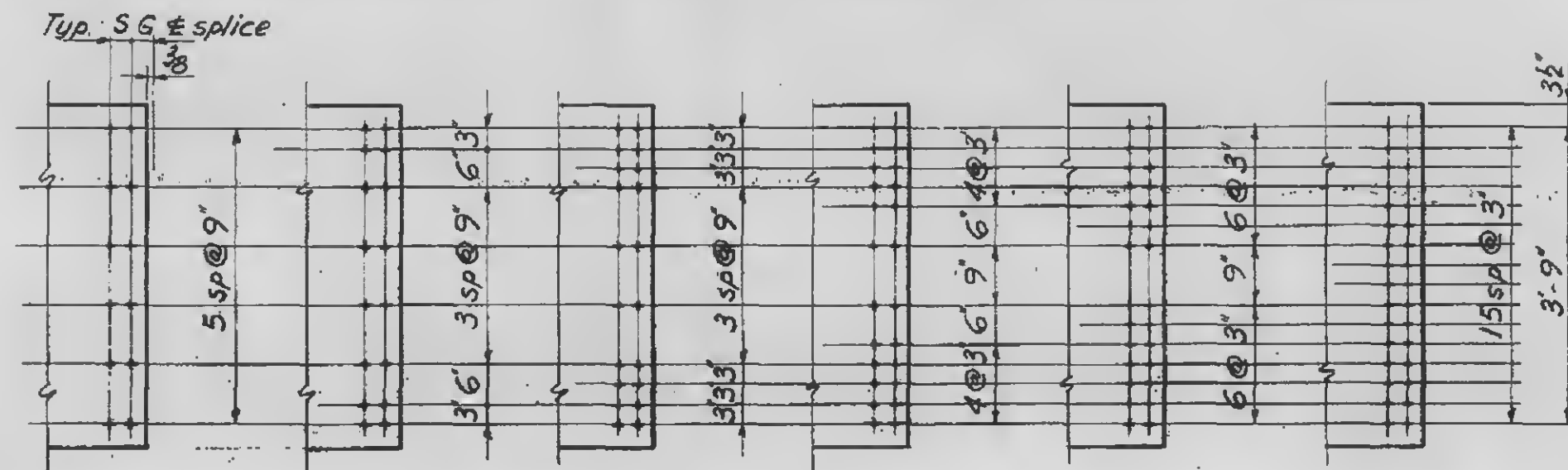
TITLE **EXTERIOR WALL SPANDREL CONNECTION DETAILS 101-135**

DATE **6-5-67**

REVISIONS



Details 101 & 121   Details 102 & 122   Details 103 & 123   Details 104 & 124   Details 105 & 125   Details 106 & 126



Detail 111   Details 112 & 131   Details 113 & 132   Details 114 & 133   Detail 134   Detail 135

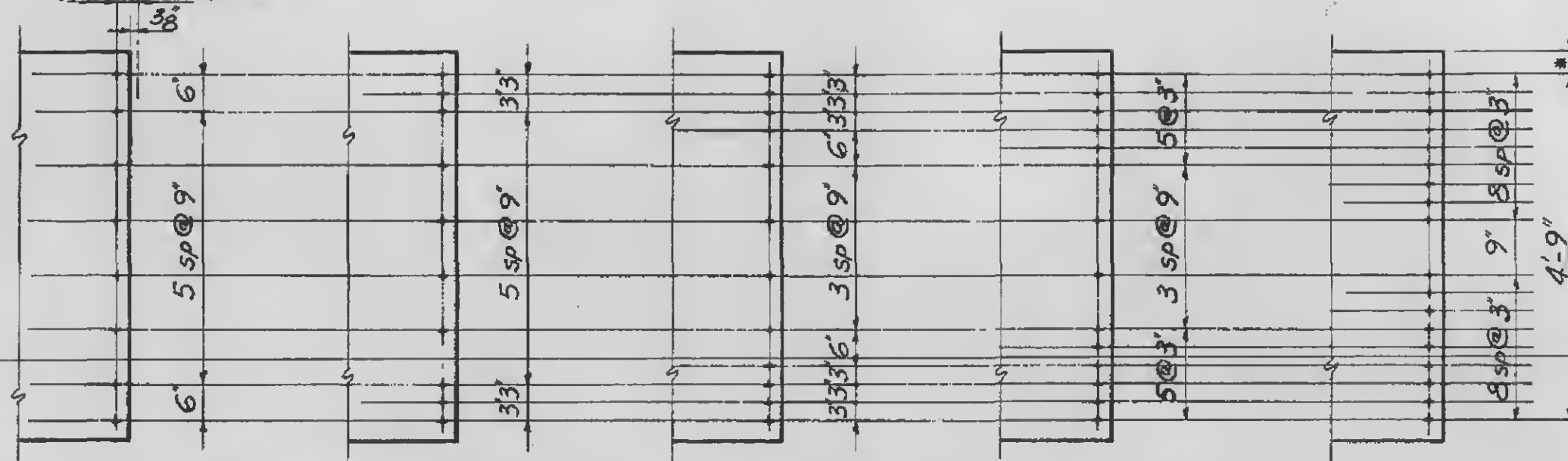
- NOTES: 1. For splice plate detail see 4-AB2-29  
 2. For dimension and bolt schedule, see 4-AB2-30  
 3. Holes in spandrel plate to be 1/4" larger than diameter of bolt.



REVISIONS

7-18-69

Typ G & splice



Details 201, 221 & 241

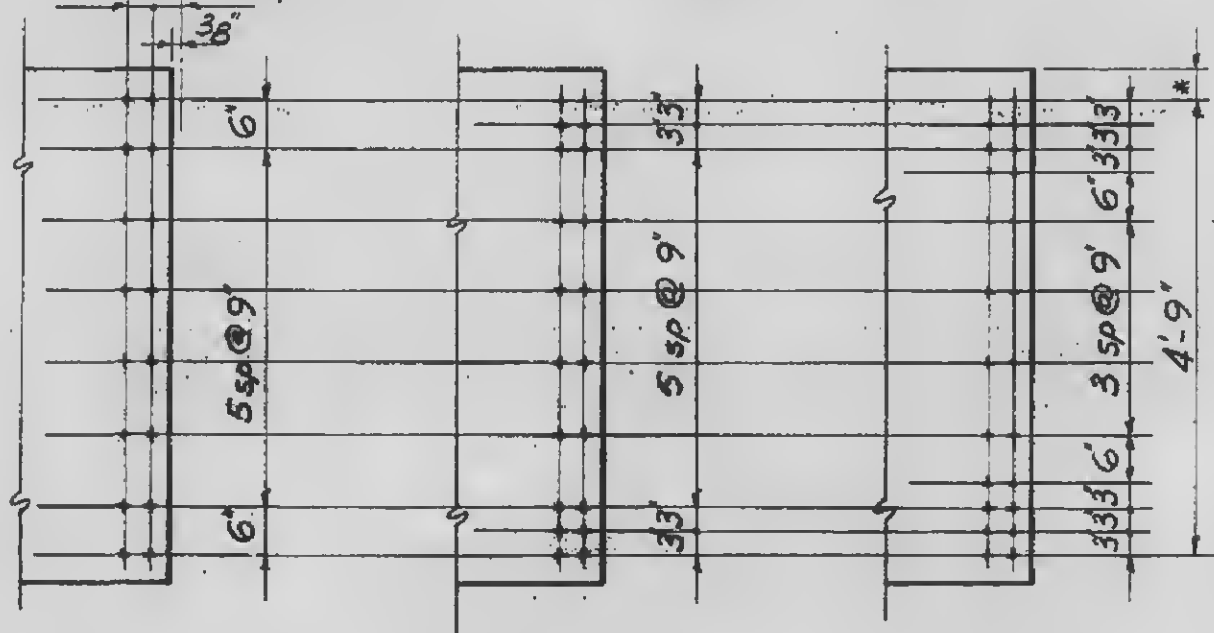
Details 202, 222 & 242

Details 203 & 223

Details 224

Detail 251

S G & splice

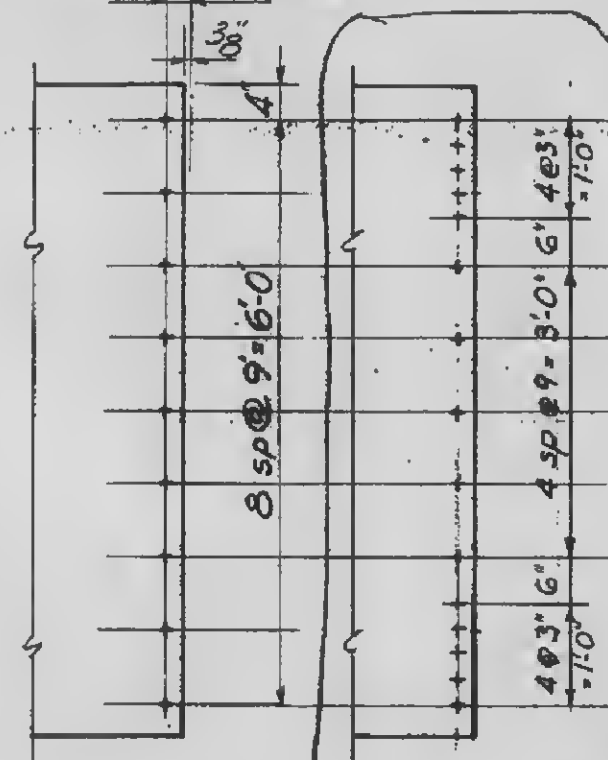


Detail 231

Details 211 & 232

Details 212 & 233

G & splice



Detail 301

Detail 302

- NOTES: 1. For splice plate detail see 4-AB2-29  
2. For dimension and bolt schedule, see 4-AB2-30  
3. Holes in spandrel plate to be 1/4" larger than diameter of bolt.  
4. \* = 3 1/2" For detail No. 201-223 (5'-4" spandrel)  
= 4 1/2" For detail No. 241-251 (5'-6" spandrel)

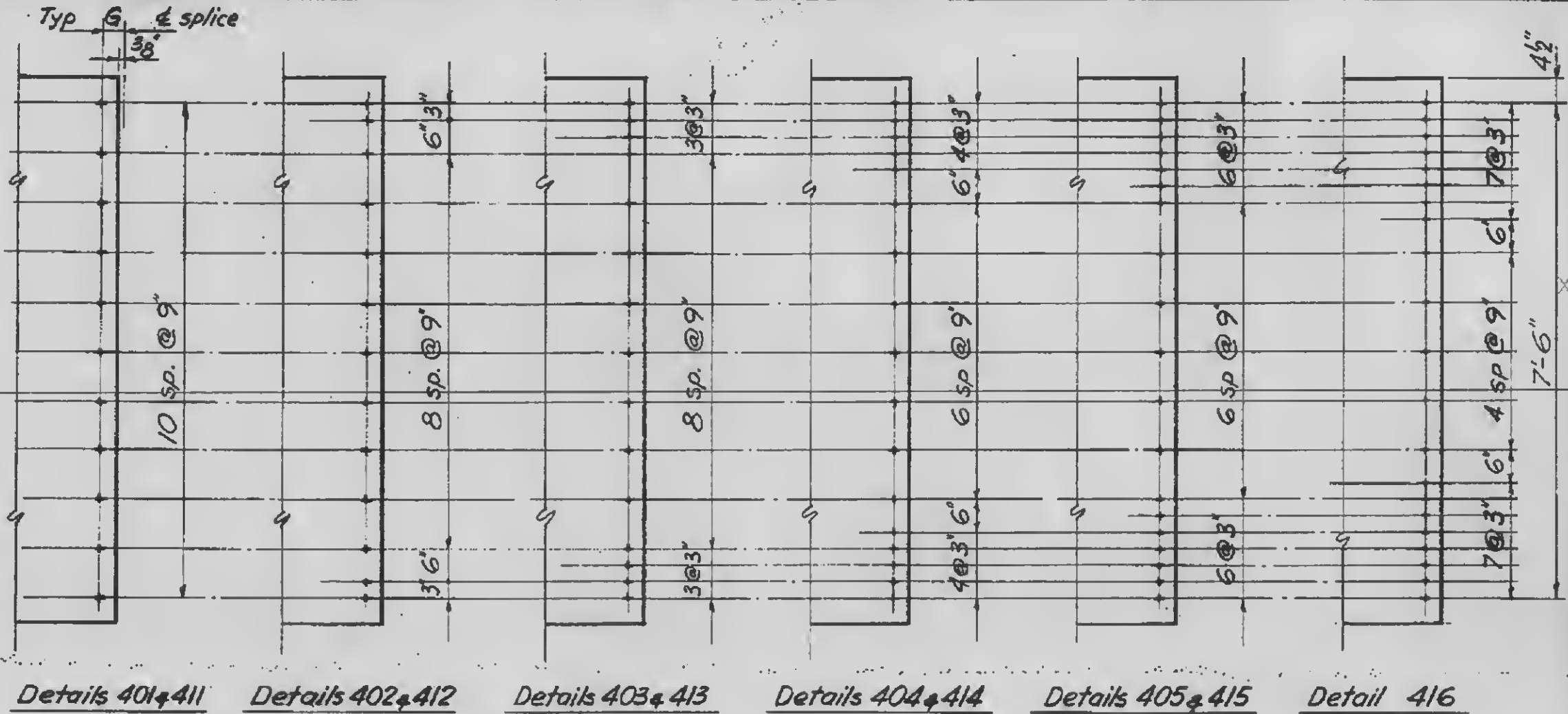


PROJECT **THE WORLD TRADE CENTER**

TITLE **EXTERIOR WALL SPANDREL CONNECTION DETAILS 401-416**

DATE **6-5-67**

REVISIONS



- NOTES: 1. For splice plate detail see 4-AB2-29  
 2. For dimension and bolt schedule see 4-AB2-30  
 3. Holes in spandrel plate to be 1/4" larger than diameter of bolt.





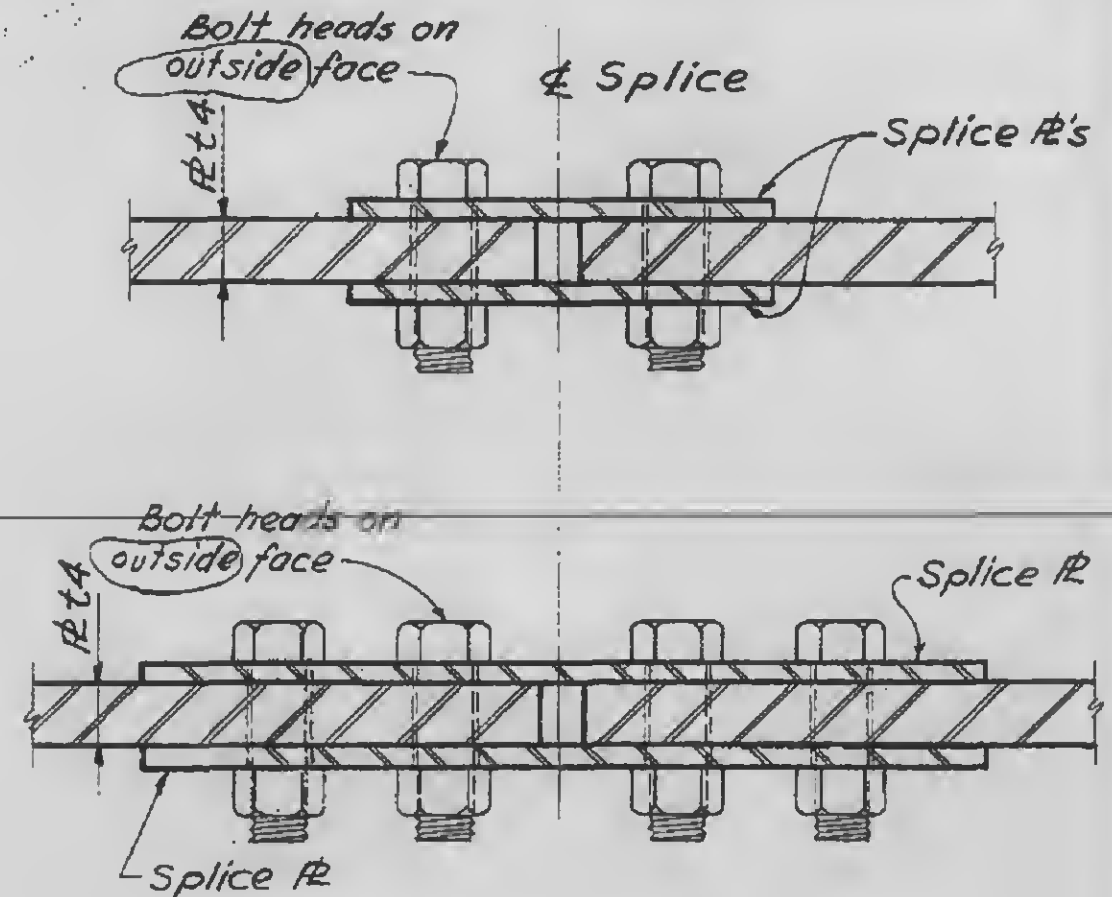
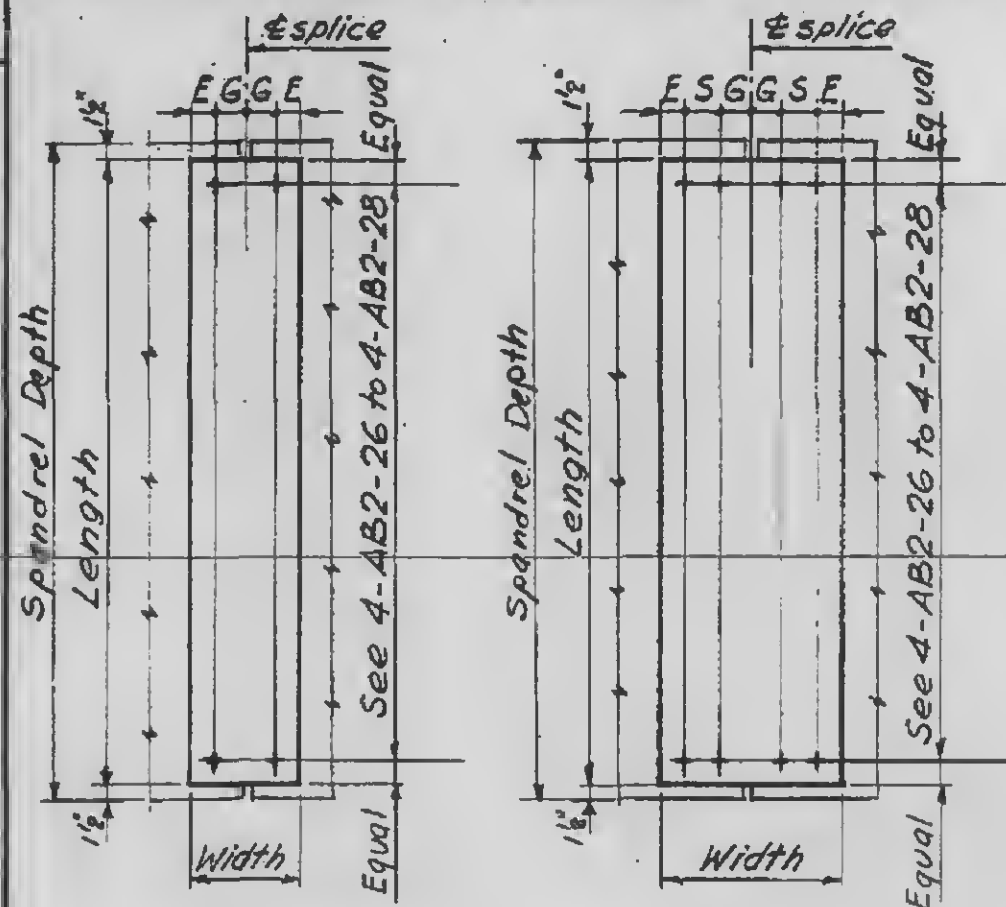
PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL SPANDREL CONNECTION SPLICE PLATE

DATE 6-5-67

REVISIONS

3-11-68



- NOTES:
1. For vertical bolt layout, see 4-AB2-26 to 4-AB2-28
  2. For splice plate dimensions and bolt size see 4-AB2-30
  3. Holes in splice plate to be  $1/16$ " larger than diameter of bolt.
  4. At fabricators' option, splice plates may be provided with holes matching holes in spandrel, or with complete pattern of holes.

PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - SPANDREL CONNECTION SCHEDULE

DATE 6- 5-67

## REVISIONS

7-18-69

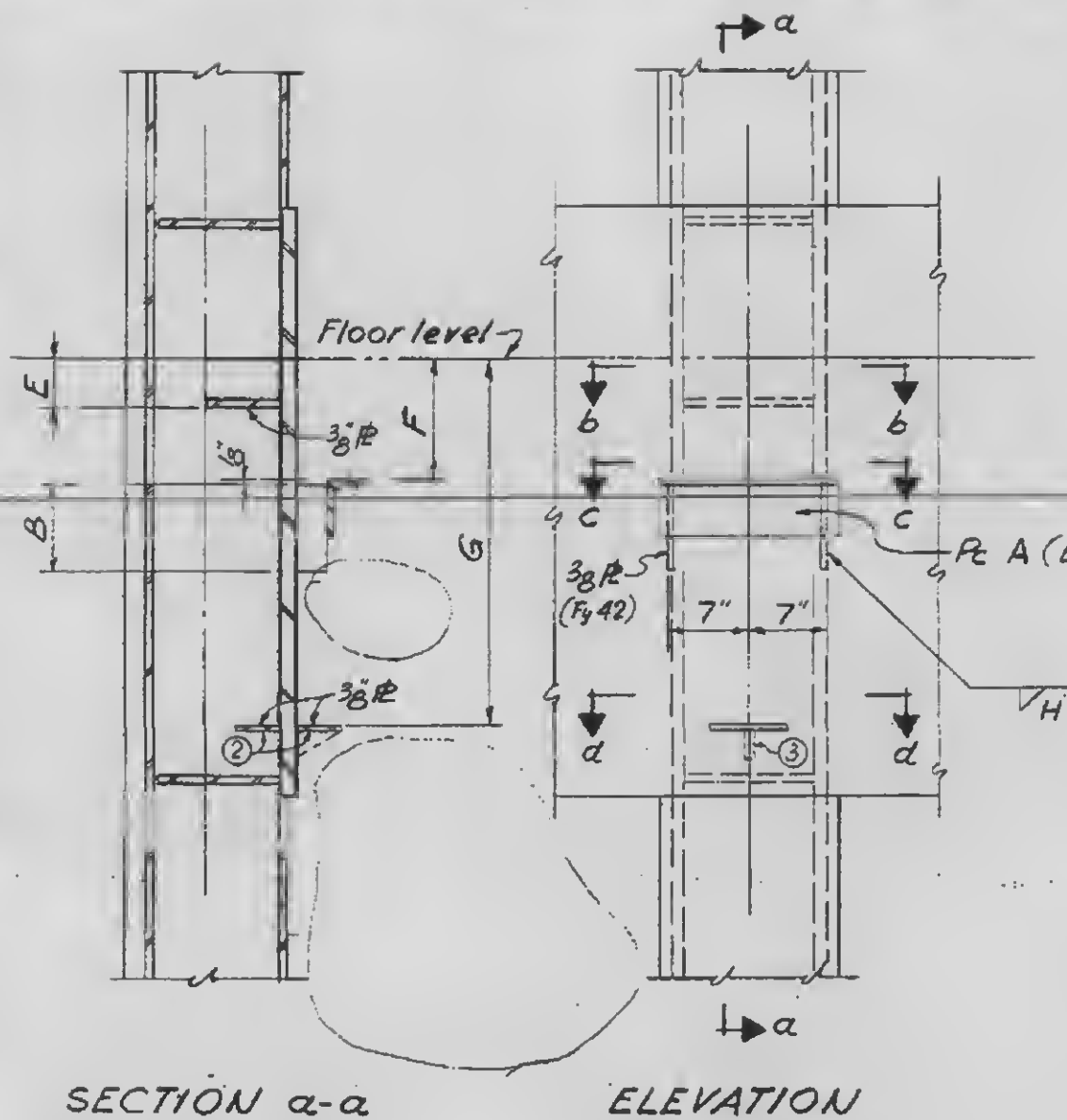
DETAIL NUMBER	BOLTS A325		SPLICE PLATE FY 36						
	NO	SIZE	WIDTH INCHES	THK IN	LNTH FT-IN	DIM E INCH	DIM G INCH	DIM S INCH	
101	6	7/8	6-3/4	1/4	4- 1	1-1/2	1-7/8	-	
102	8	7/8	6-3/4	1/4	4- 1	1-1/2	1-7/8	-	
103	10	7/8	6-3/4	1/4	4- 1	1-1/2	1-7/8	-	
104	12	7/8	6-3/4	1/4	4- 1	1-1/2	1-7/8	-	
105	14	7/8	6-3/4	1/4	4- 1	1-1/2	1-7/8	-	
106	16	7/8	6-3/4	1/4	4- 1	1-1/2	1-7/8	-	
111	12	7/8	12-3/4	1/4	4- 1	1-1/2	1-7/8	3	
112	16	7/8	12-3/4	1/4	4- 1	1-1/2	1-7/8	3	
113	20	7/8	12-3/4	1/4	4- 1	1-1/2	1-7/8	3	
114	24	7/8	12-3/4	1/4	4- 1	1-1/2	1-7/8	3	
121	6	1-1/8	8-3/4	3/8	4- 1	2	2-3/8	-	
122	8	1-1/8	8-3/4	3/8	4- 1	2	2-3/8	-	
123	10	1-1/8	8-3/4	3/8	4- 1	2	2-3/8	-	
124	12	1-1/8	8-3/4	3/8	4- 1	2	2-3/8	-	
125	14	1-1/8	8-3/4	3/8	4- 1	2	2-3/8	-	
126	16	1-1/8	8-3/4	3/8	4- 1	2	2-3/8	-	
131	16	1-1/8	14-3/4	3/8	4- 1	2	2-3/8	3	
132	20	1-1/8	14-3/4	3/8	4- 1	2	2-3/8	3	
133	24	1-1/8	14-3/4	3/8	4- 1	2	2-3/8	3	
134	28	1-1/8	14-3/4	3/8	4- 1	2	2-3/8	3	
135	32	1-1/8	14-3/4	3/8	4- 1	2	2-3/8	3	
201	8	7/8	6-3/4	1/4	5- 1	1-1/2	1-7/8	-	
202	10	7/8	6-3/4	1/4	5- 1	1-1/2	1-7/8	-	
203	12	7/8	6-3/4	1/4	5- 1	1-1/2	1-7/8	-	
211	20	7/8	12-3/4	1/4	5- 1	1-1/2	1-7/8	3	
212	24	7/8	12-3/4	1/4	5- 1	1-1/2	1-7/8	3	
221	8	1-1/8	8-3/4	3/8	5- 1	2	2-3/8	-	
222	10	1-1/8	8-3/4	3/8	5- 1	2	2-3/8	-	
223	12	1-1/8	8-3/4	3/8	5- 1	2	2-3/8	-	
224	14	1-1/8	8-3/4	3/8	5- 1	2	2-3/8	-	
231	16	1-1/8	14-3/4	3/8	5- 1	2	2-3/8	3	
232	20	1-1/8	14-3/4	3/8	5- 1	2	2-3/8	3	
233	24	1-1/8	14-3/4	3/8	5- 1	2	2-3/8	3	
241	8	1-1/8	8-3/4	3/8	5- 3	2	2-3/8	-	
242	10	1-1/8	8-3/4	3/8	5- 3	2	2-3/8	-	
251	18	1-1/8	8-3/4	3/8	5- 3	2	2-3/8	-	
301	9	7/8	6-3/4	1/4	6- 5	1-1/2	1-7/8	-	
302	15	7/8	6-3/4	1/4	6- 5	1-1/2	1-7/8	-	
401	11	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
402	13	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
403	15	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
404	17	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
405	19	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
411	11	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
412	13	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
413	15	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
414	17	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
415	19	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	
416	21	1-1/8	8-3/4	3/8	8- 0	2	2-3/8	-	



## REVISIONS

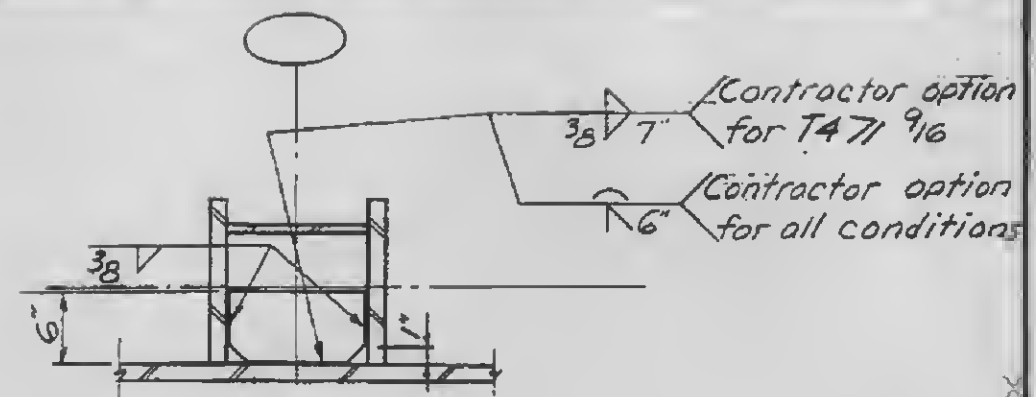
8-28-67

11-7-67

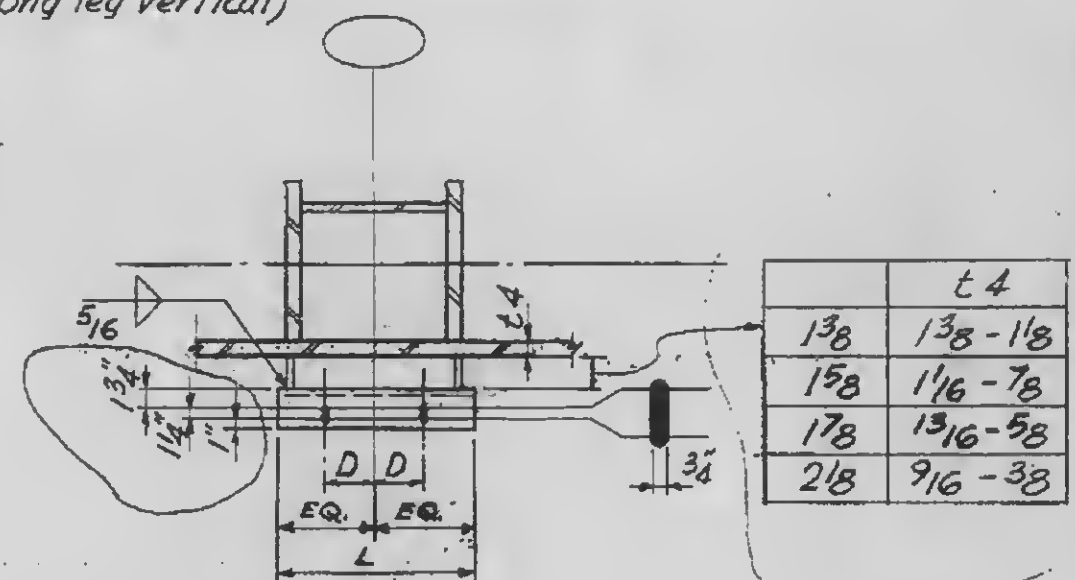


SECTION a-a

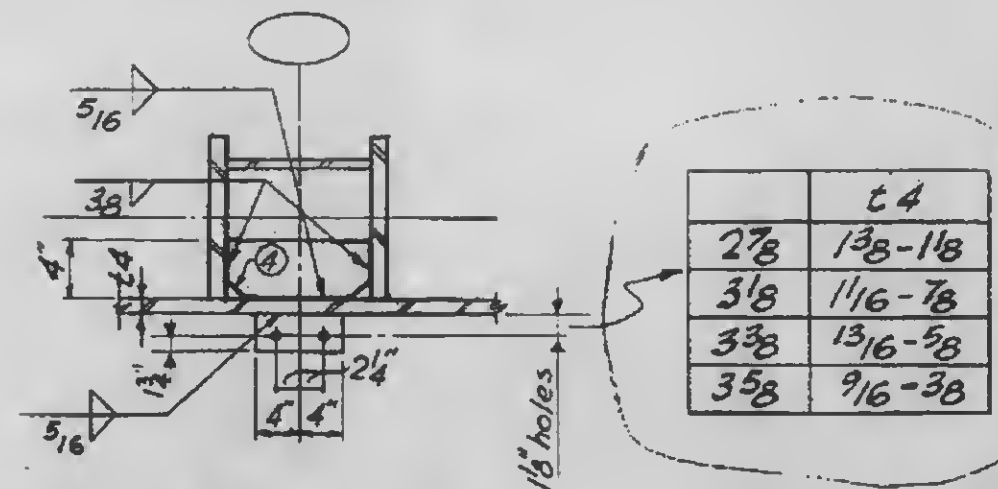
### ELEVATION



SECTION b-b



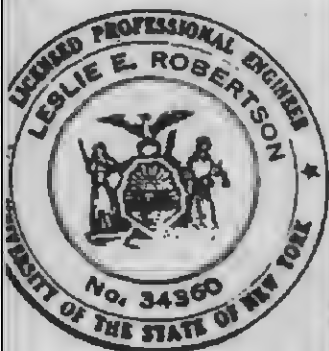
SECTION C-C



SECTION d-d

## NOTES

- ① See 4-AB2-35 for schedule
- ② Omit these plates if "G" is omitted from schedule
- ③ Stiffener plate at option of contractor
- ④ Clip corners of inside plates if necessary to clear welds "5or" "7"



4-AB2-31

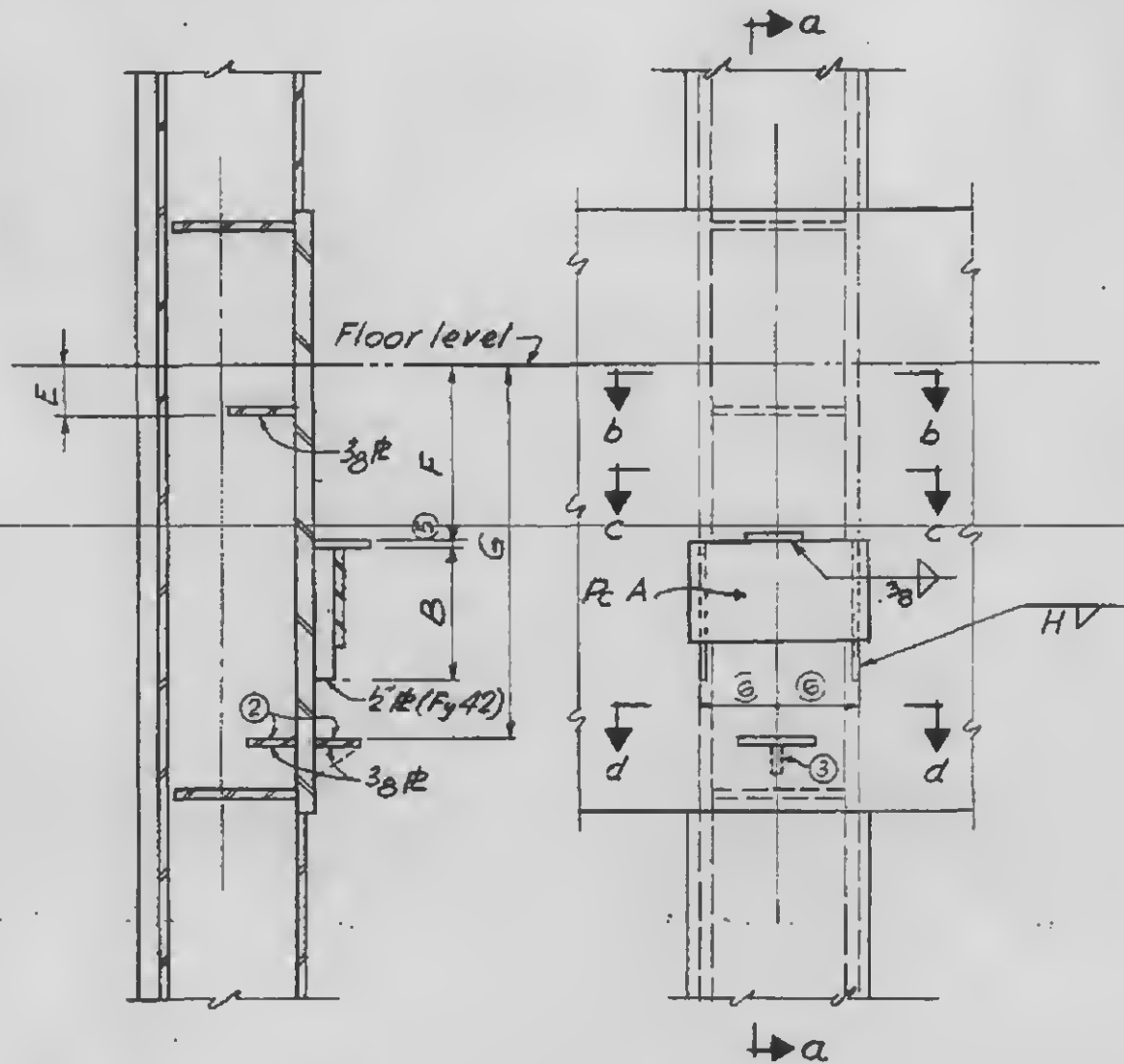
PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - SEAT DETAILS 4064 - 4731

DATE 7-10-67

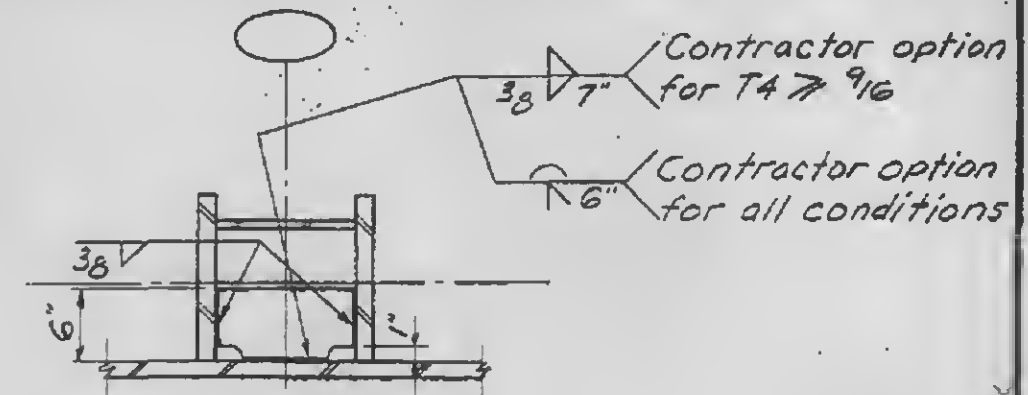
REVISIONS

8-28-67  
11-7-67  
11-30-67  
10-18-68  
3-12-69  
11-10-69  
3-16-70

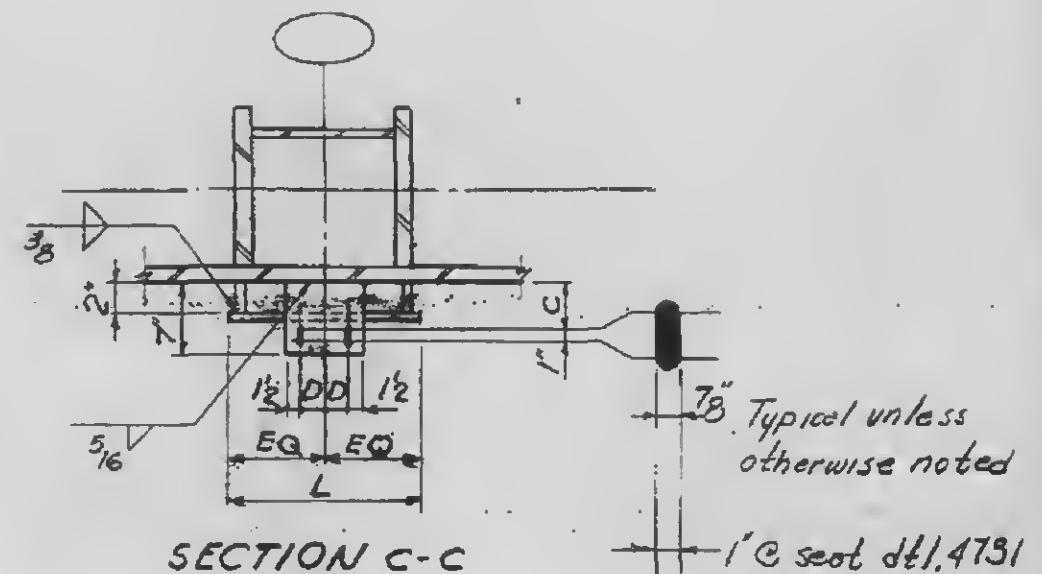


SECTION a-a

ELEVATION



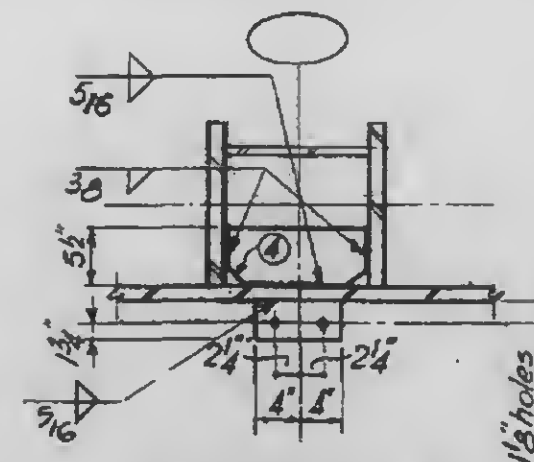
SECTION b-b



SECTION c-c

NOTES

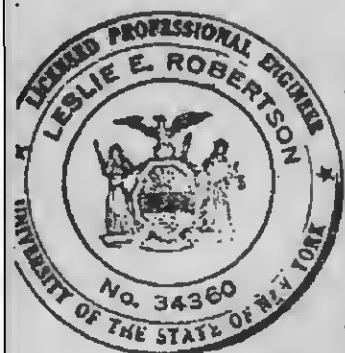
- 1 See 4-AB2-35, 36 & 37 for schedule
- 2 Omit these plates if 'G' is omitted from schedule
- 3 Stiffener plate at option of contractor
- 4 Clip corners of inside plates if necessary to clear welds 5 or 7
- 5 Thickness of R same as thickness of piece A
- 6 This dimension 7 3/4" at floors 41 and 75; 8" at floors 43 and 77; 5 1/2" at floor 107, 7" all other floors where seats of this type are required.



SECTION d-d

	t4
2 3/8	1 3/8 - 1 3/8
3 1/8	1 5/16 - 7/8
3 3/8	1 3/16
3 5/8	9/16, 7/16, 5/8

4-AB2-32



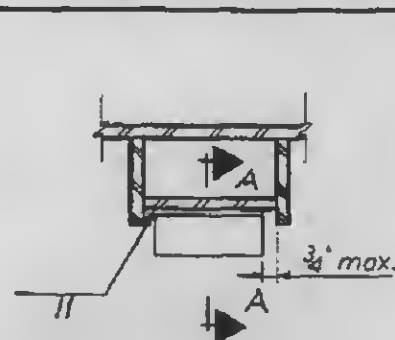
PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL SEAT DETAILS

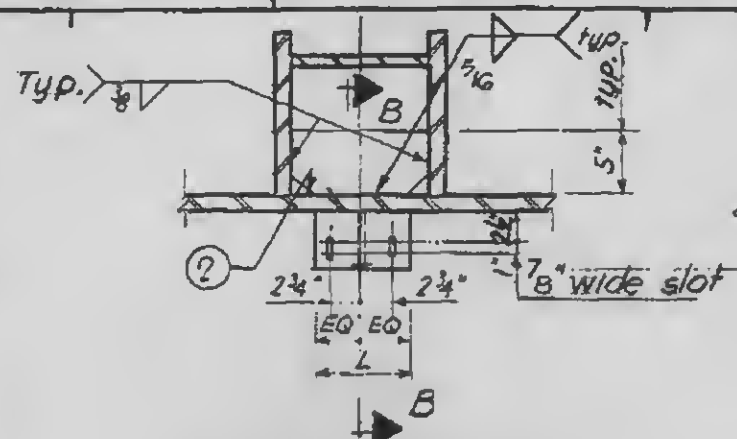
DATE 7-10-67

## REVISIONS

-28-67  
11-7-67  
7-15-68  
10-18-68  
3-16-70

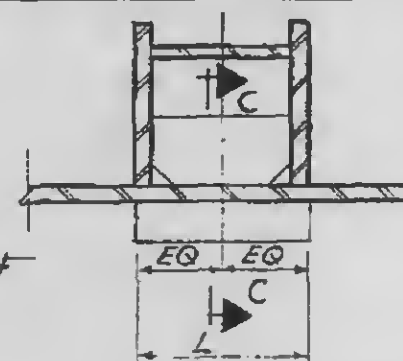


DETAIL 5010  
Col. No. 100, 200  
300, 400

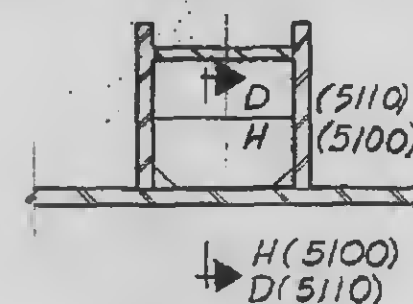
CASE I

DETAIL 5010.5310  
5410, 5510, 5610

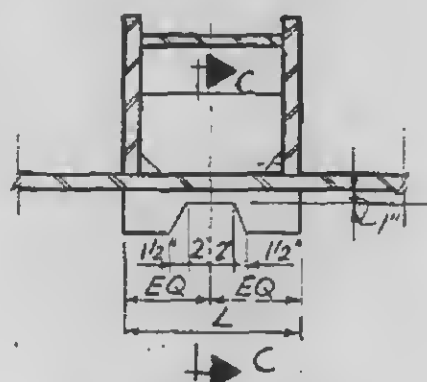
All cols. where sch. except case I

CASE II

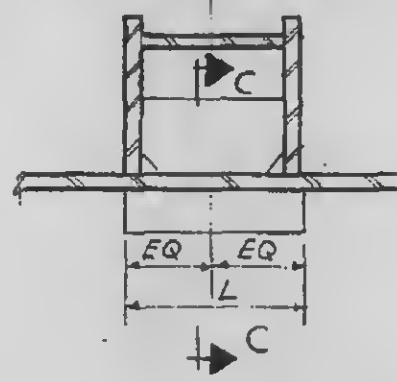
DETAIL 5110  
All columns where sch.  
not included in case IV

CASE III

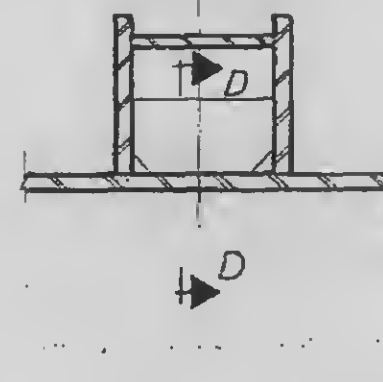
DETAIL 5110  
All columns where sch.  
Col. No. 205, 207, 216, 244  
253, 255, 405, 407, 416  
444, 453, 455

CASE IVDETAIL 5210

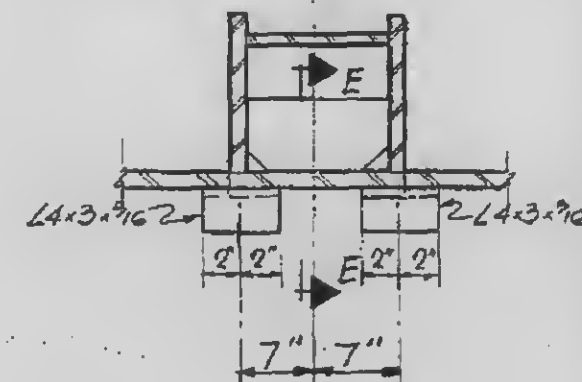
Col. No. 110, 120, 130, 140, 150, 220  
230, 240, 310, 320, 330, 340  
350, 420, 430, 440

CASE VDETAIL 5210

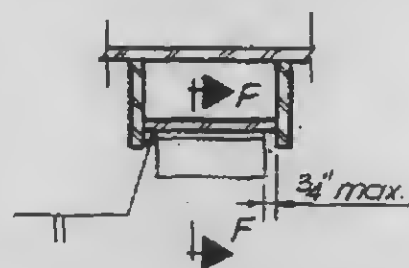
All cols. where scheduled not included in case V, VI, VII

CASE VIDETAIL 5210

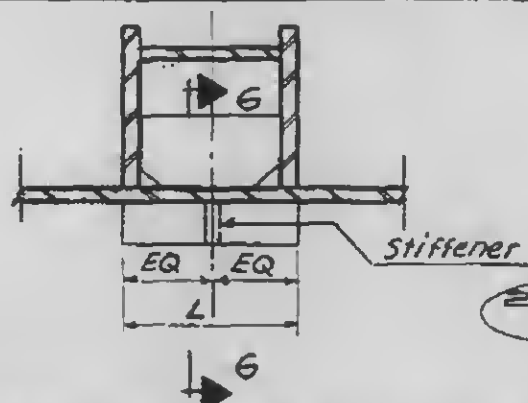
Col. No. 203, 209, 213, 247, 251  
257, 403, 409, 413, 447, 451, 457

CASE VIIDETAIL 5210

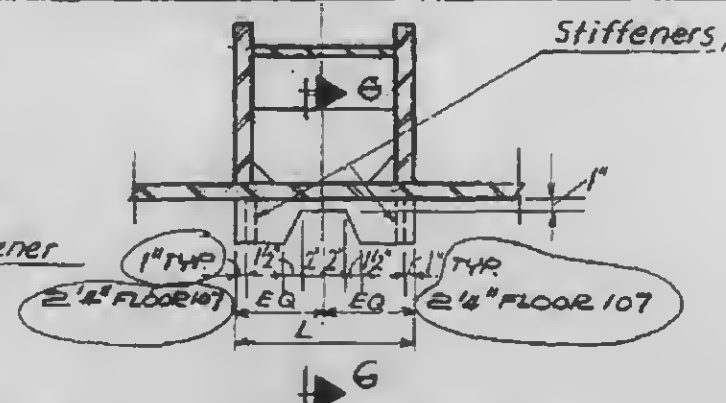
Col. No. 211, 249,  
411, 449.

CASE VIII

DETAIL 6020  
Col. No. 100, 200, 300 & 400

CASE IX

DETAILS 6020 (except case IX)  
6220 (except case XI),  
6120, 6320, 6520, 6620, 6720, 6820

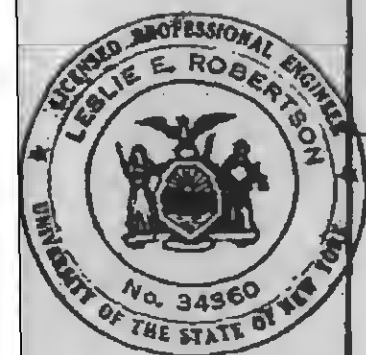
CASE X

DETAIL 6220  
Col. No. 110, 120, 130, 140, 150, 220, 230, 240, 211, 249  
310, 320, 330, 340, 350, 420, 430, 440, 411, 449

CASE XI

For Sections  
A-A thru H-H  
see 4-AB2-33.1

4-AB2-33



PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL SEAT DETAILS

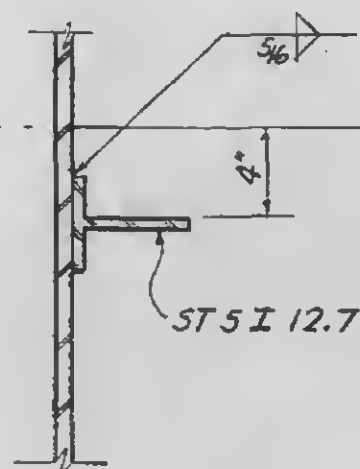
DATE

11-7-67

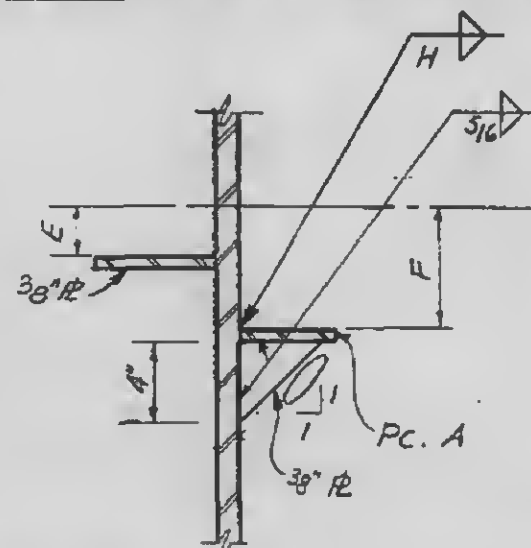
## REVISIONS

10-18-68

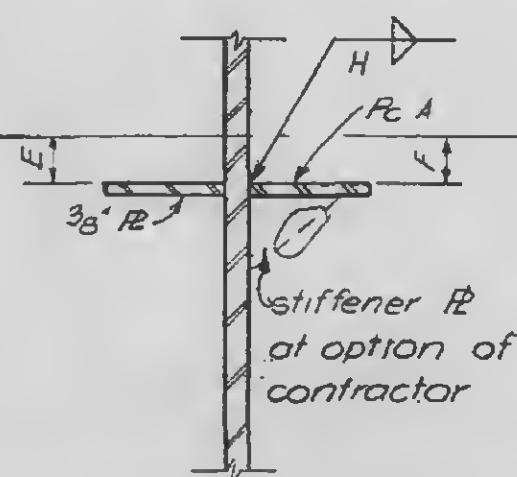
Floor line

Note:  
No diaph.  $\bar{P}$ .

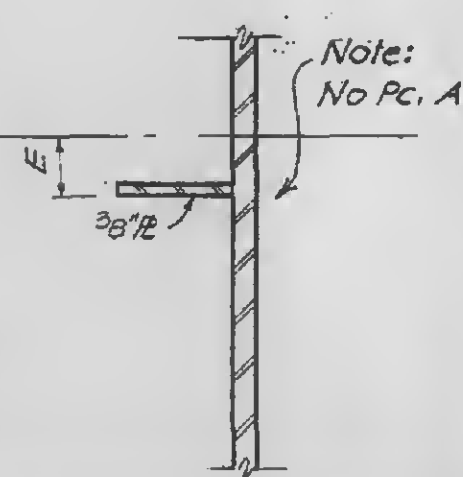
Section A-A



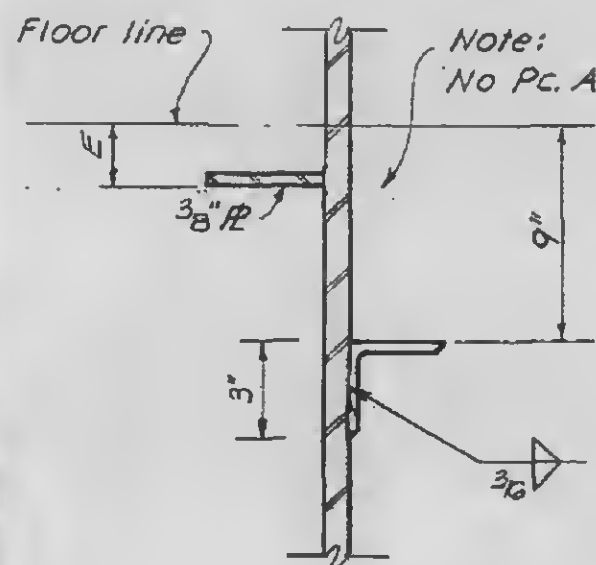
Section B-B



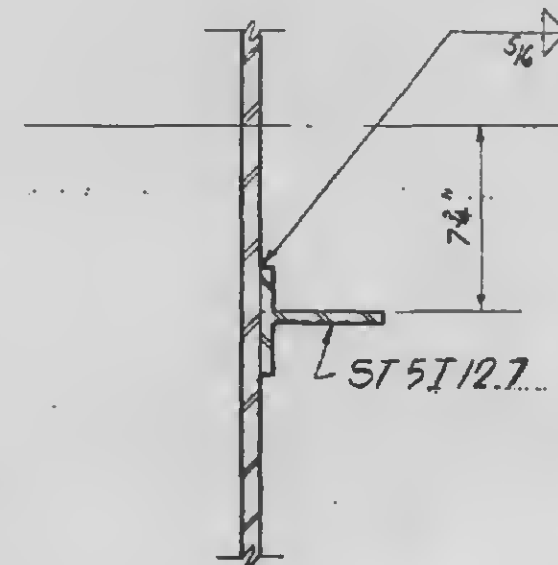
Section C-C



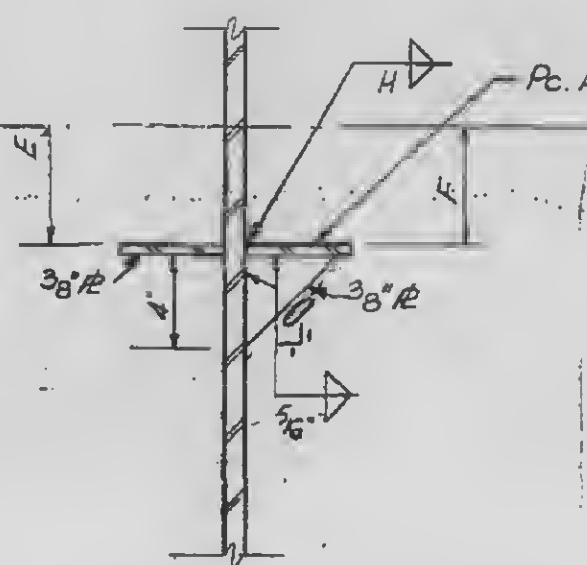
Section D-D



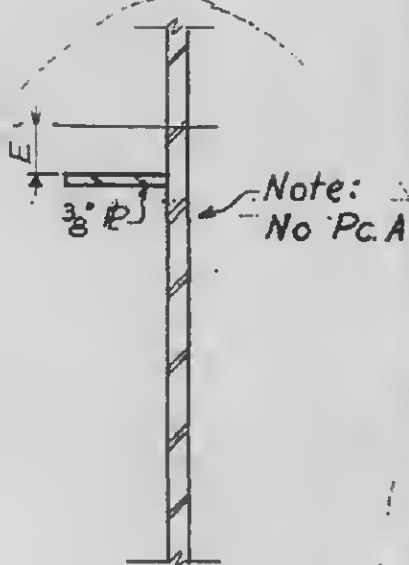
Section E-E



Section F-F



Section G-G



Section H-H

## Notes:

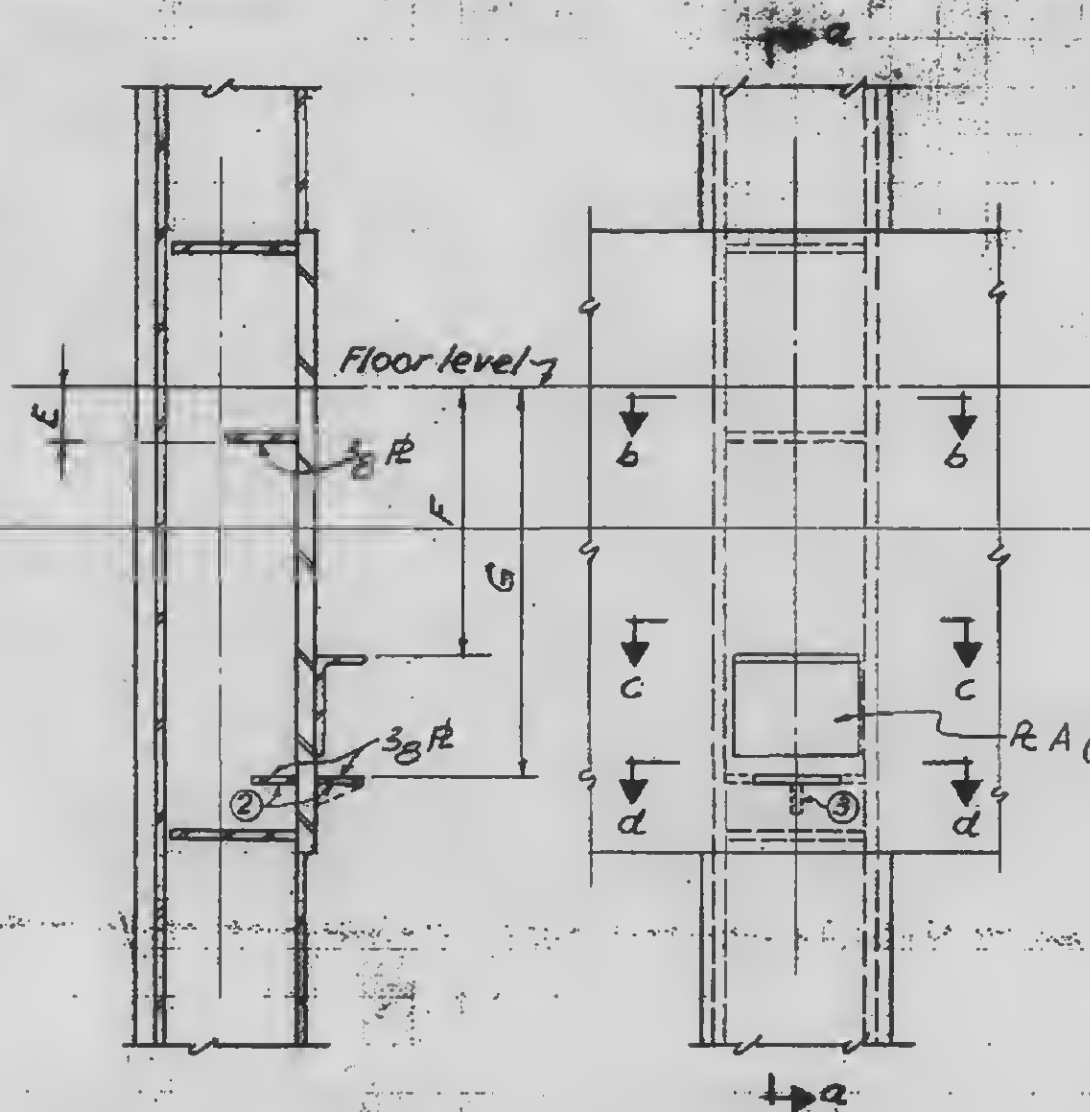
1. See 4-AB2-36 for dimension
- ② Clip corners of inside plate where necessary to clear welds #5 or #7.

4-AB2-33.1



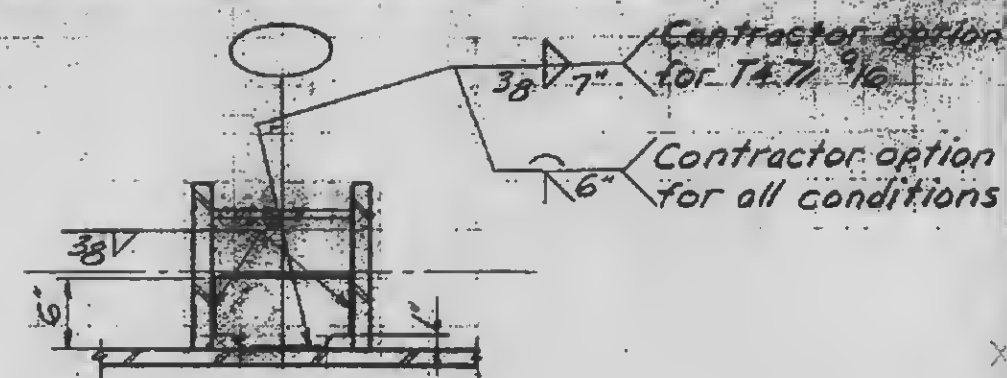


8-28-67  
11-7-67  
3-16-70

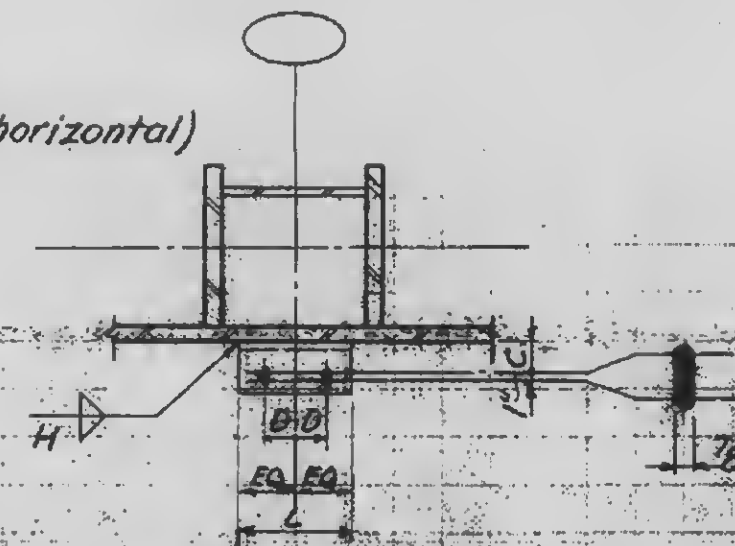


SECTION a-a

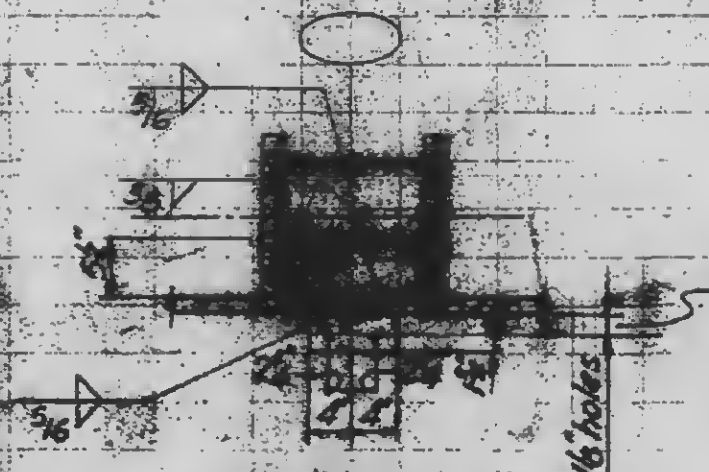
ELEVATION



SECTION 6-6



**SECRET**



**SEIZURE OF**

	14
$-3\frac{1}{8}$	$15\frac{1}{16} - 7\frac{1}{8}$
$3\frac{5}{8}$	$13\frac{1}{16}$
$8\frac{3}{8}$	$21\frac{1}{16}, 7\frac{1}{16}$

## VOTES

- ① See 4-AB2-16 for schedule
- ② Omit these plates if 6 is omitted from schedule
- ③ Stiffener plate at out of contract
- ④ Clip corners of angle plates if necessary to clear



PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - SEAT DETAIL SCHEDULE I

DATE 10-18-68

## REVISIONS

## DIMENSIONS IN INCHES

SEAT DET	PIECE	A	FY36	L	B	C	D	E	F	G	H
1013	L	4X4	X1/2	16	8	-	1-5/8	5-1/2	8-1/2	30-3/4	5/16
1111	L	4X4	X1/2	16	8	-	4-1/4	4	8-1/2	32	5/16
1113	L	6X4	X3/8	16	8	-	4-1/4	5-1/2	10	29-1/2	3/8
1212	L	6X4	X3/8	16	8	-	1-5/8	5-1/2	8-3/4	30-3/4	3/8
1311	L	4X4	X1/2	16	8	-	5-1/4	4	8-1/2	32	5/16
1313	L	4X4	X1/2	16	8	-	1-5/8	4	8-1/2	32	5/16
1411	L	6X4	X5/8	16	9	-	5-1/4	4	8-1/2	32	3/8
1511	L	6X4	X5/8	16	10	-	5-1/4	4	8-1/2	32	3/8
1611	L	6X4	X3/4	16	11	-	5-1/4	4	8-1/2	32	3/8
2010	L	4X4	X5/8	16	8	-	1-5/8	4	14-5/8	-	3/8
2110	L	6X4	X5/8	16	9	-	4-1/4	4	14-5/8	-	3/8
2210	L	6X4	X5/8	16	10	-	1-5/8	4	14-5/8	-	3/8
2310	L	6X4	X5/8	16	9	-	5-1/4	4	14-5/8	-	3/8
2410	L	6X4	X5/8	16	10	-	5-1/4	4	14-5/8	-	3/8
2510	L	6X4	X3/4	16	11	-	5-1/4	4	14-5/8	-	3/8
2610	L	7X4	X3/4	16	12	-	5-1/4	4	14-5/8	-	3/8
3013	L	4X4	X5/8	16	8	-	1-5/8	5-1/2	8-1/2	30-3/4	3/8
3212	L	6X4	X5/8	16	9	-	1-5/8	5-1/2	8-1/2	30-3/4	3/8
3311	L	4X4	X5/8	16	8	-	5-1/4	4	8-1/2	32	3/8
3313	L	4X4	X5/8	16	8	-	1-5/8	4	8-1/2	32	3/8
3411	L	6X4	X5/8	16	10	-	5-1/4	4	8-1/2	32	3/8
3511	L	6X4	X3/4	16	11	-	5-1/4	4	8-1/2	32	3/8
4064	P	8X	1/2	19	8	4-1/2	1-3/4	7-3/4	24-1/4	46	3/8
4110	P	9X	1/2	16	9	4-1/2	2-3/4	4	18	-	3/8
4120	P	9X	1/2	16	9	4-1/2	2-3/4	4	18-1/2	-	3/8
4140	P	9X	1/2	16	9	4-1/2	2-3/4	6	18	-	3/8
4141	P	9X	1/2	16	9	4-1/2	1-3/4	4	22-1/2	43	3/8
4174	P	9X	5/8	19	12	4-1/2	2-3/4	7-3/4	24-1/4	46	3/8
4184	P	9X	1/2	19	9	4-1/2	1-3/4	7-3/4	26-1/4	46	3/8
4241	P	9X	5/8	16	12	4-1/2	2-3/4	4	22-1/2	43	3/8
4274	P	9X	5/8	19	12	4-1/2	2-3/4	7-3/4	24-1/4	46	3/8
4284	P	9X	5/8	19	12	4-1/2	2-3/4	7-3/4	26-1/4	46	3/8
4324	P	11X	7/8	19	14	4-1/2	2-3/4	7-3/4	22-3/4	46	3/8
4410	P	11X	7/8	16	17	4-1/2	2-3/4	4	16	-	3/8
4424	P	11X	7/8	19	17	4-1/2	2-3/4	7-3/4	22-3/4	46	3/8
4510	P	12X1		16	20	4-1/2	2-3/4	4	18	-	3/8
4511	P	12X1		16	20	4-1/2	2-3/4	4	22	43	3/8
4524	P	12X1		19	20	4-1/2	2-3/4	7-3/4	22-3/4	46	3/8
4530	P	12X1		16	20	4-1/2	2-3/4	5-1/2	17-1/2	-	3/8
4531	P	12X1		16	20	4-1/2	2-3/4	5-1/2	23-1/2	43	3/8
4540	P	12X1		16	20	4-1/2	2-3/4	6	18	-	3/8



R.

PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL - SEAT DETAIL SCHEDULE II

DATE

3-12-69

REVISIONS

DIMENSIONS IN INCHES

SEAT DET	PIECE	A	FY36	L	B	C	D	E	F	G	H
4611	P	8X1		16	12	4-1/2	2-3/4	4	10	32	7/16
4612	P	8X1		16	12	4-1/2	2-3/4	5-1/2	10	29-1/2	7/16
4621	P	10X1		16	15	4-1/2	2-3/4	4	10	32	7/16
4622	P	10X1		16	15	4-1/2	2-3/4	5-1/2	10	29-1/2	7/16
4631	P	15X1		16	22	4-1/2	2-3/4	4	10	32	5/8
4632	P	15X1		16	22	4-1/2	2-3/4	4	14	32	5/8
5010	P	5X	3/8	8	-	-	-	5-1/8	8-7/8	-	5/16
5100	-	-		-	-	-	-	4	-	-	-
5110	P	4X	3/8	14	-	-	-	4	4	-	5/16
5210	P	4X	3/8	14	-	-	-	4	4	-	5/16
5310	P	5X	3/8	8	-	-	-	5-1/8	6-7/8	-	5/16
5410	P	5X	3/8	8	-	-	-	5-1/8	8-7/8	-	5/16
5510	P	5X	3/8	8	-	-	-	5-1/8	8-7/8	-	5/16
5610	P	5X	3/8	8	-	-	-	5-1/8	8-7/8	-	5/16
6020	P	4X	3/8	14	-	-	-	13-9/16	13-9/16	-	5/16
6120	P	4X	3/8	14	-	-	-	13-9/16	13-9/16	-	5/16
6220	P	4X	3/8	14	-	-	-	13-9/16	13-9/16	-	5/16
6320	P	4X	3/8	14	-	-	-	13-9/16	13-9/16	-	5/16
6520	P	4X	3/8	14	-	-	-	13-9/16	13-9/16	-	5/16
6620	P	4X	3/8	14	-	-	-	13-9/16	13-9/16	-	5/16
6720	P	4X	3/8	14	-	-	-	13-9/16	13-9/16	-	5/16
6820	P	4X	3/8	14	-	-	-	13-9/16	13-9/16	-	5/16
7010	L	4X6	X5/8	9	-	2-1/2	1-1/8	13-9/16	13-9/16	-	5/16
7020	L	4X6	X5/8	9	-	2-1/2	1-3/4	9-1/4	21-3/4	-	5/16
7030	L	4X6	X5/8	9	-	2-1/2	1-3/4	5-1/2	13-1/2	-	5/16
7220	L	6X6	X3/4	12	-	2-1/2	1-3/4	4	18-1/2	-	3/8
7221	L	6X6	X3/4	12	-	2-1/2	1-3/4	4	18-1/2	43	3/8
7230	L	6X6	X3/4	12	-	2-1/2	2-3/4	6	18	-	3/8
7240	L	6X6	X3/4	12	-	2-1/2	2-3/4	5-1/2	17-1/2	-	3/8
7241	L	6X6	X3/4	12	-	2-1/2	1-3/4	5-1/2	20	43	3/8
7321	L	8X6	X3/4	14	-	2-1/2	1-3/4	4	18-1/2	43	3/8
7354	L	8X6	X3/4	16	-	2-1/2	1-3/8	7-3/4	24-1/4	46	3/8
7364	L	8X6	X3/4	16	-	2-1/2	1-3/4	7-3/4	24-1/4	46	3/8
7440	L	8X6	X7/8	14	-	2-1/2	2-3/4	4	18	-	7/16
7441	L	8X6	X7/8	14	-	2-1/2	1-3/4	4	22-1/2	43	7/16
7450	L	8X6	X7/8	14	-	2-1/2	1-3/4	6	18	-	7/16
7464	L	8X6	X7/8	16	-	2-1/2	1-3/4	7-3/4	24-1/4	46	7/16
7494	L	8X6	X7/8	16	-	2-1/2	1-3/4	9-1/4	23-3/4	46	7/16

X



PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - SEAT DETAIL SCHEDULE III

DATE 11/10/69

## REVISIONS

## DIMENSIONS IN INCHES

SEAT DET	PIECE A	FY36	L	B	C	D	E	F	G	H
4711	P 9X	5/8	16	12	4-1/2	1-3/4	7-3/4	24-1/4	46	3/8
4712	P 9X	5/8	16	14	4-1/2	1-3/4	7-3/4	26-1/4	46	3/8
4721	P11X	7/8	16	17	4-1/2	2-3/4	7-3/4	22-3/4	46	3/8
4722	P12X1		16	20	4-1/2	2-3/4	7-3/4	22-3/4	46	3/8
4731	P12X1		16	23	4-1/2	2-3/4	7-3/4	22-3/4	46	3/8



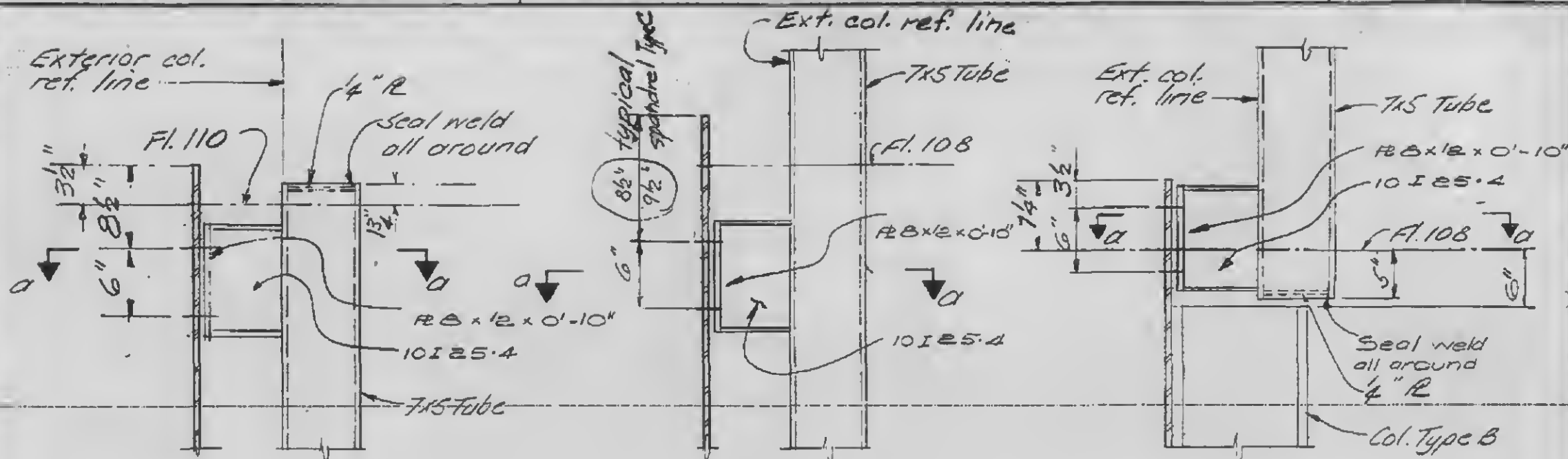
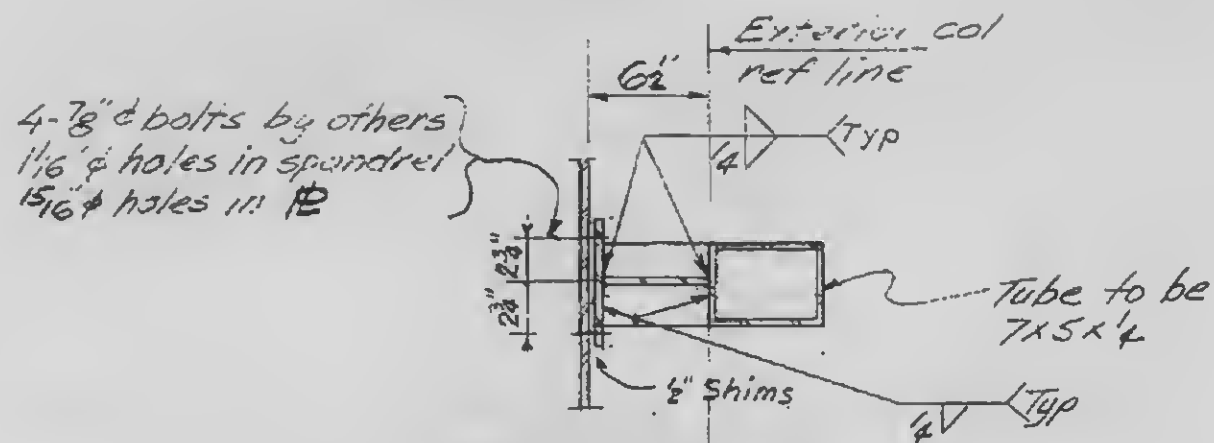
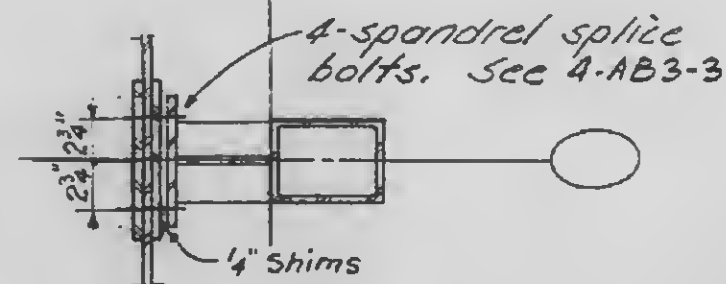
PROJECT THE WORLD TRADE CENTER

TITLE EXTERIOR WALL - 107 TO 110 - TUBE DETAILS

DATE 4-12-67

## REVISIONS

8/15/69  
12/15/69  
2-26-70  
3-16-70  
4-27-70

Detail 4Detail 5Detail 6Section a-aSection a-a  
of Spandrel Splice

DESIGNED

DRAWN

J.A.

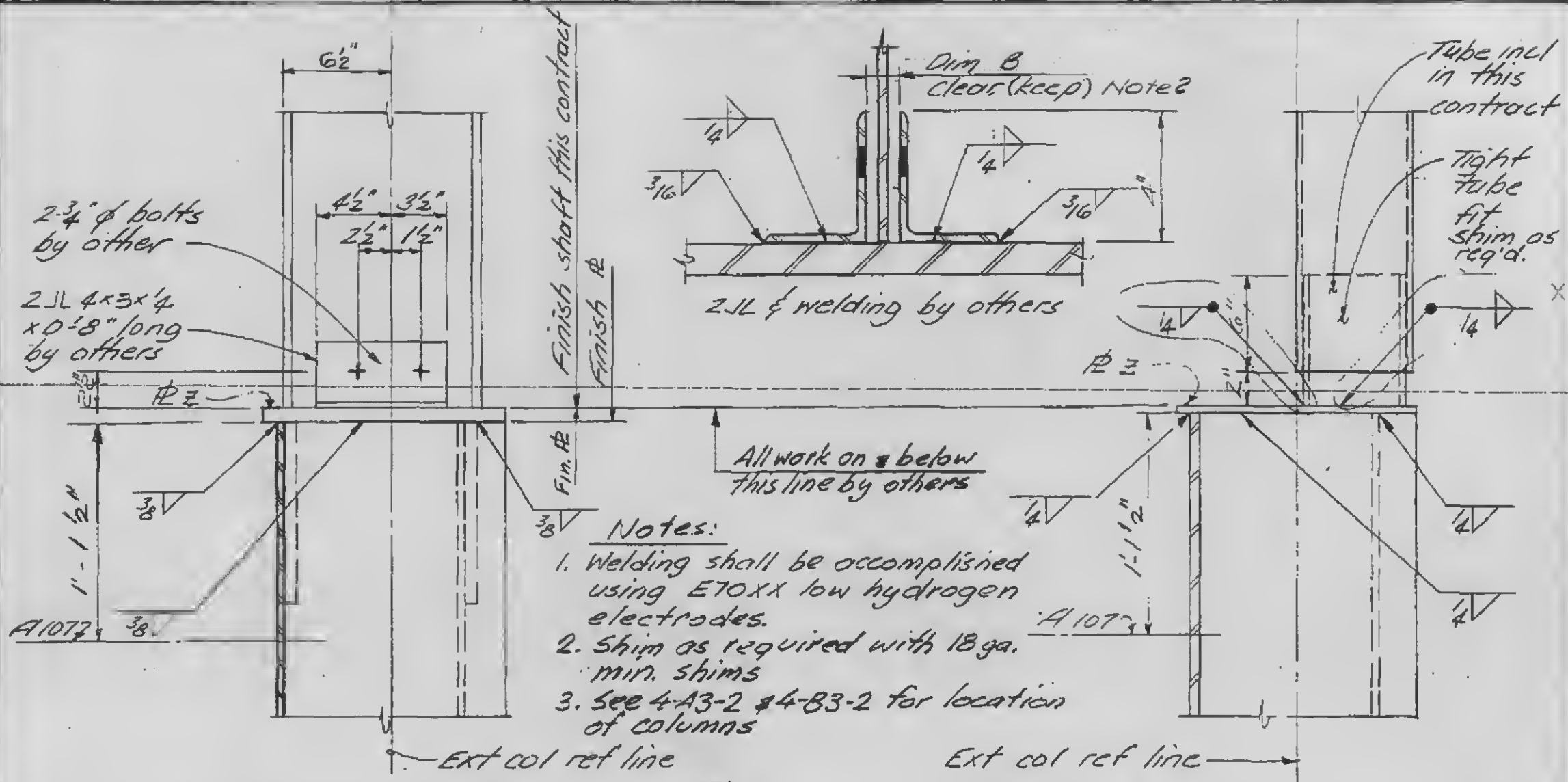
REVIEWED

W.A.B.

4-AB3-10

## REVISIONS

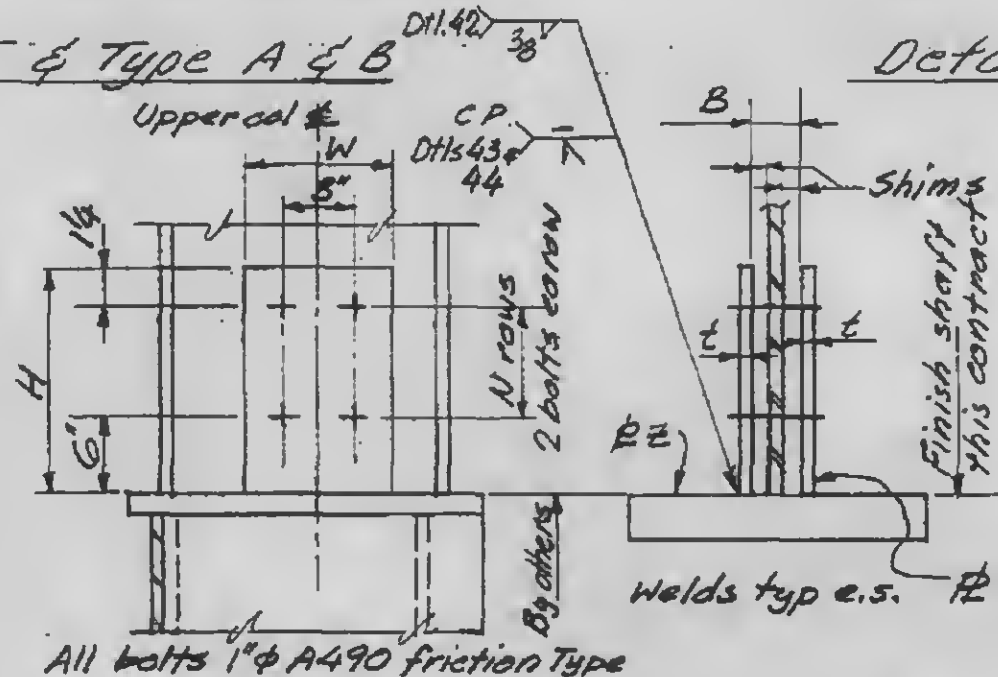
2-26-70  
3-16-70  
8-3-70R



Detail 40 @ WF & Type A & B

Col. Type	Dim. B	$R \times Z$
Type A1 (A3 & A4)	58"	1"
Type A2 (A6 & A8)	78"	1 1/2"
Type A3 (A7)	4"	1 1/2"
Type (A4 & A5)	78"	1"
Type A10	12"	1"
Type B1	58"	1"
Type B2, B3, B4	78"	1 1/2"
7x5 Tube	—	4"
12WF 40-50	12"	1"

\* finished dimension



Detail 4! @ 7x5 Tube

DH/ No	N rows	Tot No bolts	W	H	t
42	1	2	8	7 $\frac{1}{4}$	3 $\frac{3}{8}$
43	2	4	8	1-3"	5 $\frac{3}{8}$
44	3	6	5 $\frac{3}{4}$	1-4"	1 $\frac{1}{4}$

Welds typ e.s.  $\phi F_y = 42 \text{ ksi typ.}$

### Details 42, 43 & 44

4-AB3-11

DESIGNED

DRAWN  
J. A.

REVIEWED  
W.A.B.



PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL - 101 TO 110 - NOTES &amp; INDEX

DATE

4-1

## REVISIONS

11-7-67

Printed 1-3-69

2-3-69

3-3-69

4-1-69

Printed 5-1-69

8-15-69

12-15-69

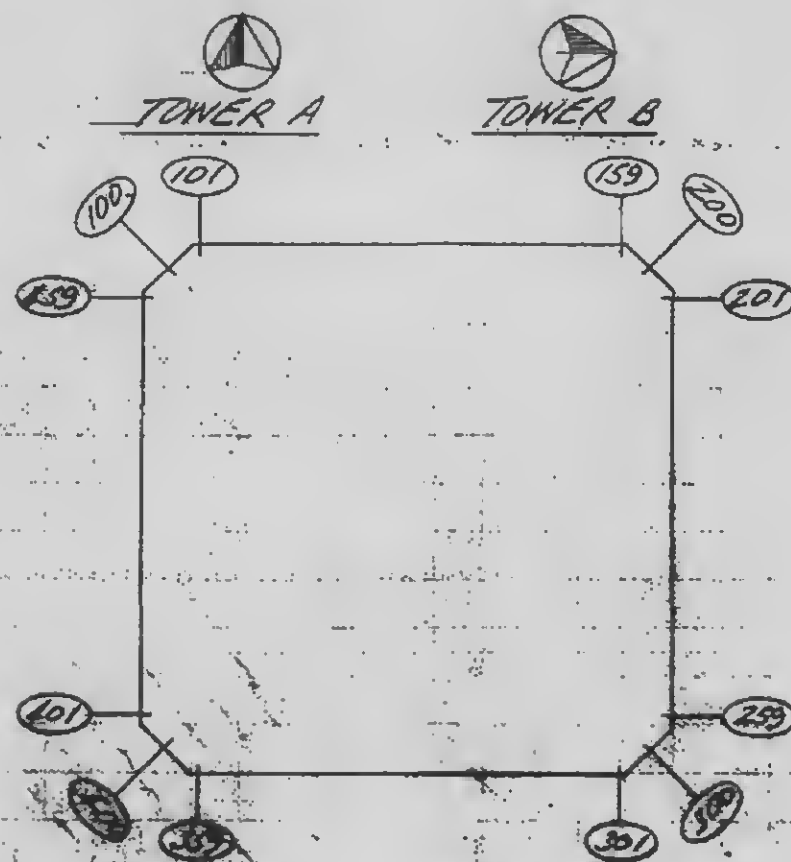
8-3-70R

## NOTES

1. See Key Plan, this sheet, for locations of wall elevations. All wall elevations are viewed from the inside looking outward.
2. All wide flange column material & columns Type A4B shall be Fy 42 unless otherwise noted.
3. Structural steel tubing shall be seamless and shall conform to ASTM A501.
4. All other material, including detail material, shall be Fy 36 unless otherwise noted.
5. All welding shall be accomplished using E70XX low hydrogen electrodes or other equivalent approved welding process.
6. All bolts shall be Friction Type A325 unless otherwise noted.
7. All bolts are furnished by others except shipping bolts.

## INDEX

- 4-AB3-1 Notes & Index
- 4-AB3-2.1 Column & Spandrel Sched. - Tower A
- 2.2
- 2.3
- 2.4
- 4-AB3-2.1 Column & Spandrel Sched. - Tower B
- 2.2
- 2.3
- 2.4
- 4-AB3-3 Spandrel Splices
- 4-AB3-4 Typical Sections
- 4-AB3-5.1 Column Details
- 4-AB3-5.2 Column Types
- 4-AB3-6 Spandrel Types
- 4-AB3-7.1 Connections Floor 108
- 4-AB3-7.2 Connections Floor 108
- 4-AB3-7.3 Connections Floor 108
- 4-AB3-8.1 Connections Floor 110
- 4-AB3-8.2 Connections Floor 110
- 4-AB3-9 Corner Details
- 4-AB3-10 Tube Details
- 4-AB3-11 Exterior Wall Splice Detail - Floor 107



KEY PLAN

4-AB3-1



PROJECT

THE WORLD TRADE CENTER

TITLE

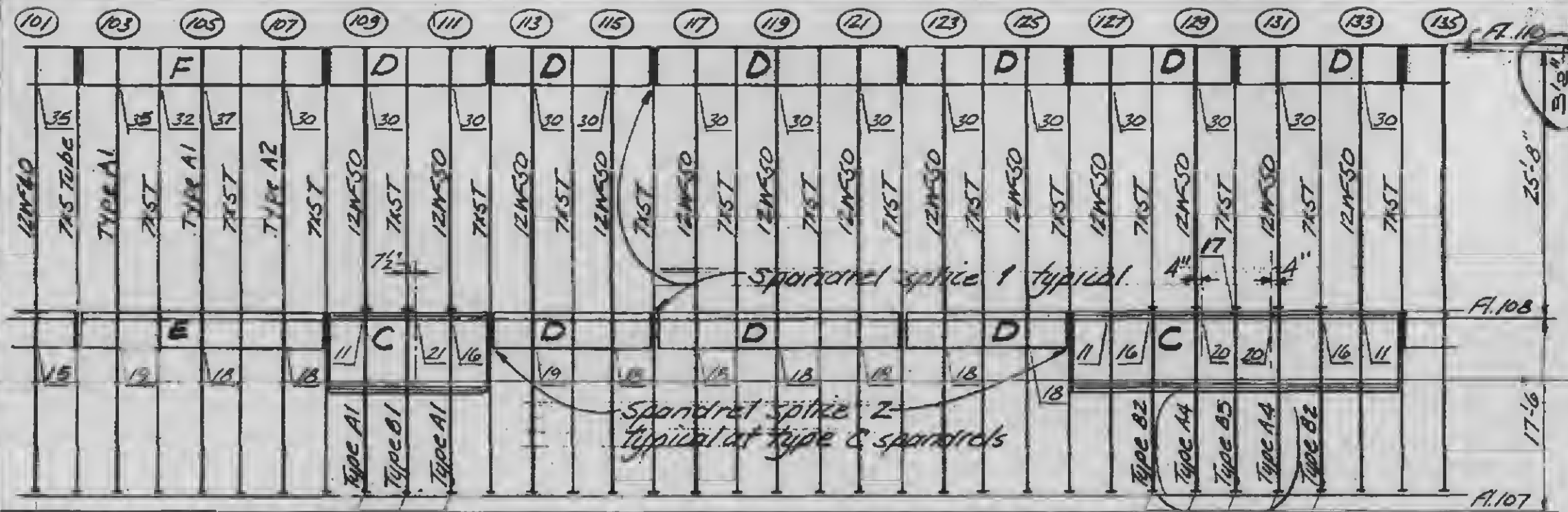
EXT WALL - 107 TO 110 - LCL &amp; SPANDREL SCH - TOWER A

DATE

8-15-69

## REVISIONS

10-23-69  
12-15-69  
Conn dets added  
2-26-70  
3-16-70



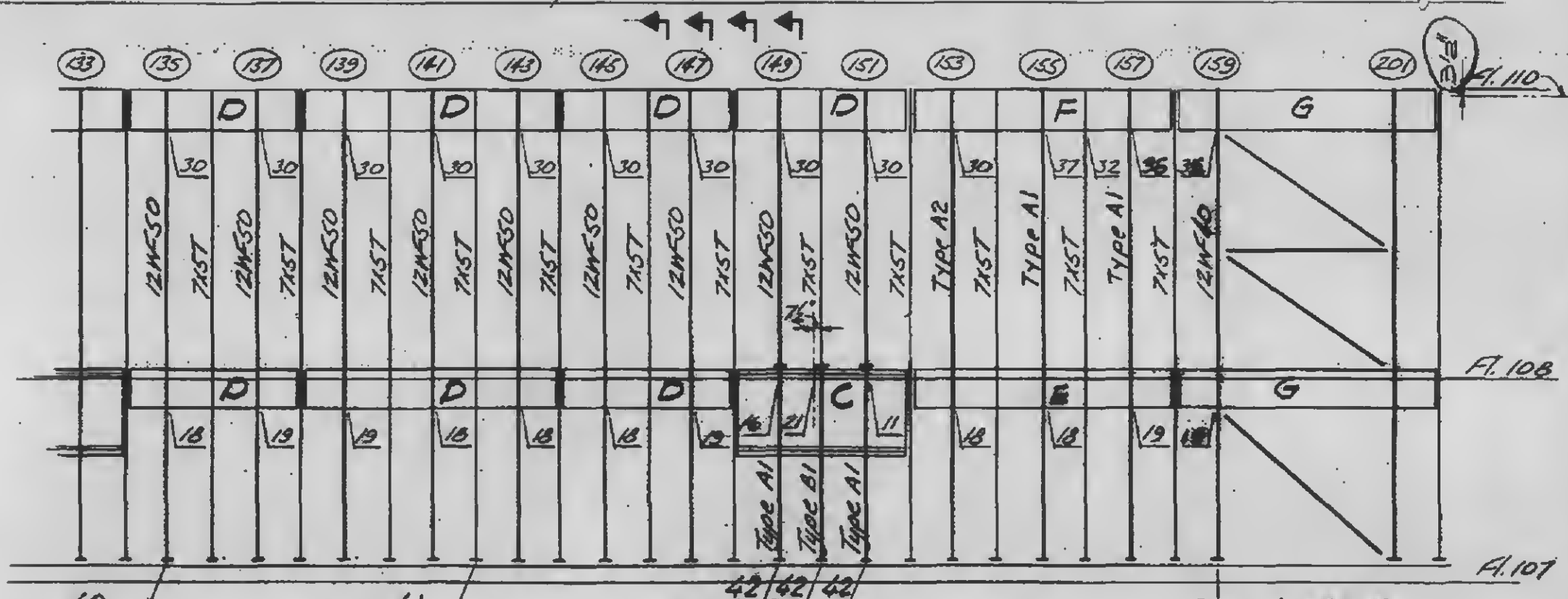
42 42 42

For column types.  
see 4-AB3-5.2

For spandrel types  
see 4-AB3-6 and 9

For column connection  
details see 4-AB3-7.1, 7.2, 8

58 spaces @ 3'-4" = 193'-4"



40

41

42 42 42

Typ @ WF unless  
otherwise noted

Typ @ Tube unless  
otherwise noted

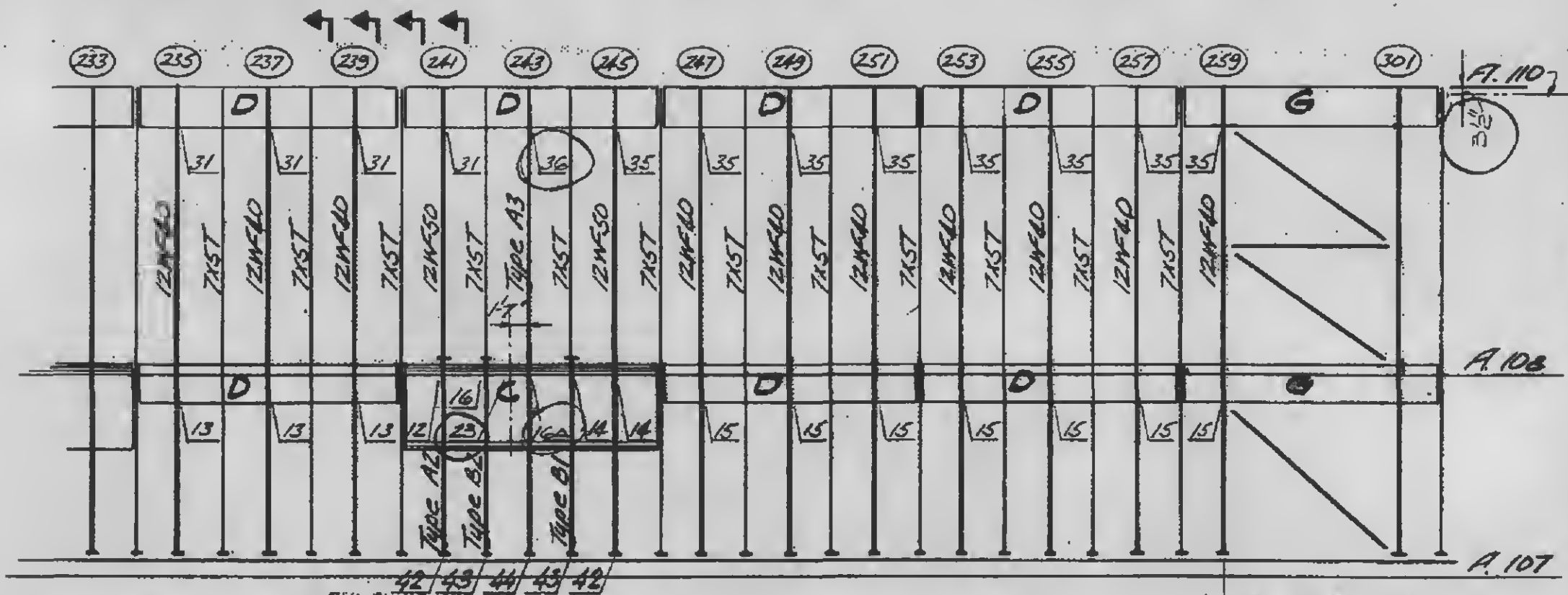
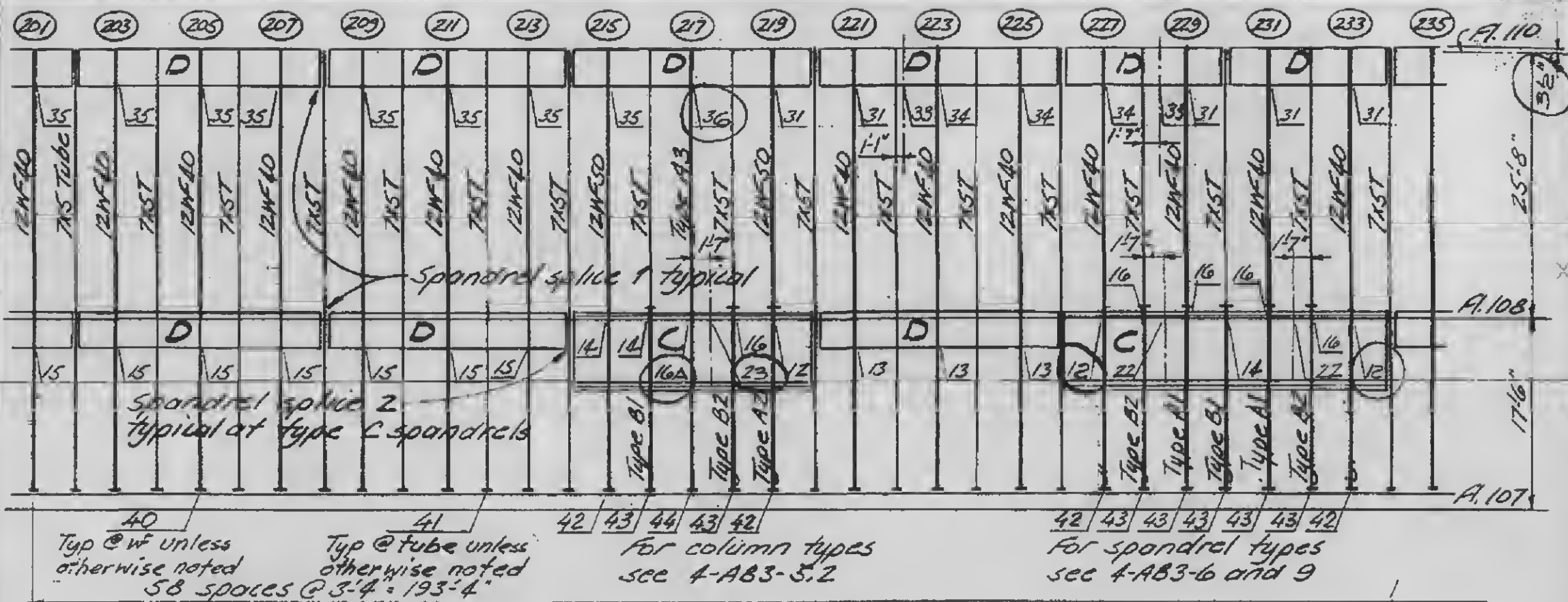
For typical wall sections  
see 4-AB3-4

For col base splice  
dets see 4-AB3-11

See 4-AB3-4

4-AB-2.1

PROJECT THE WORLD TRADE CENTER







PROJECT THE WORLD TRADE CENTER

TITLE EXT WALL-107 TO 110-COL &amp; SPANDREL SCH-TOWER A

DATE 8-15-69

## REVISIONS

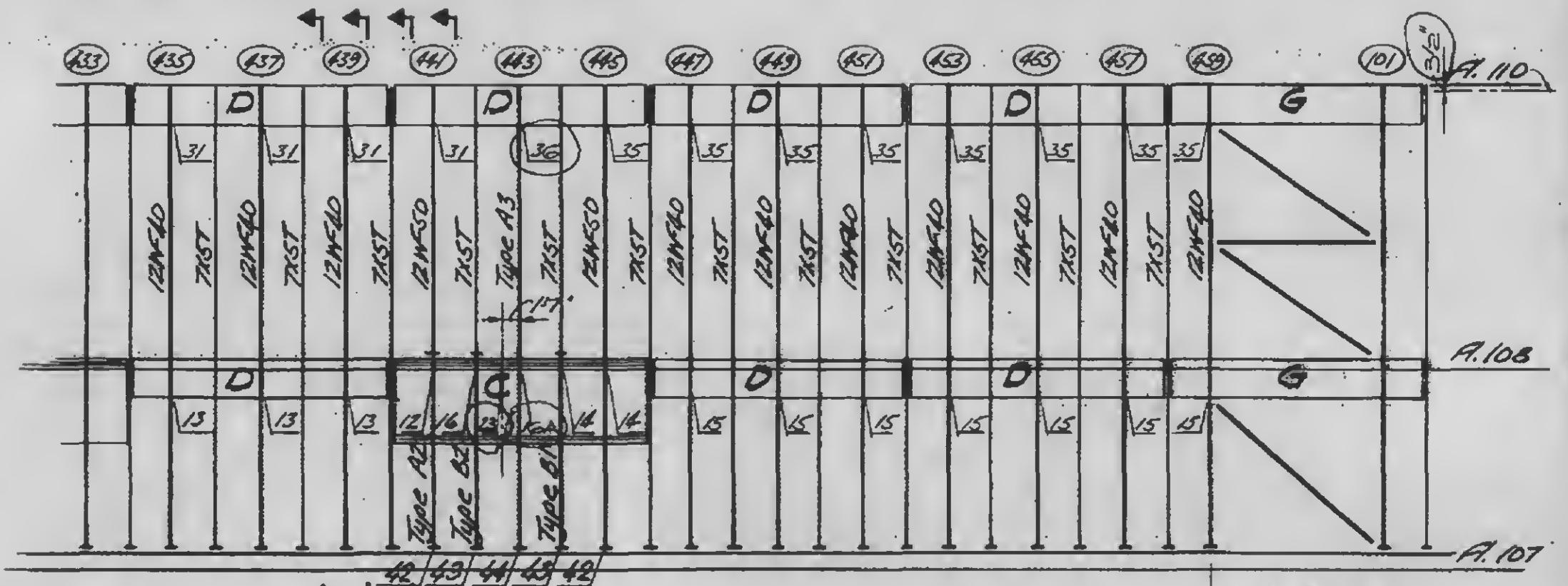
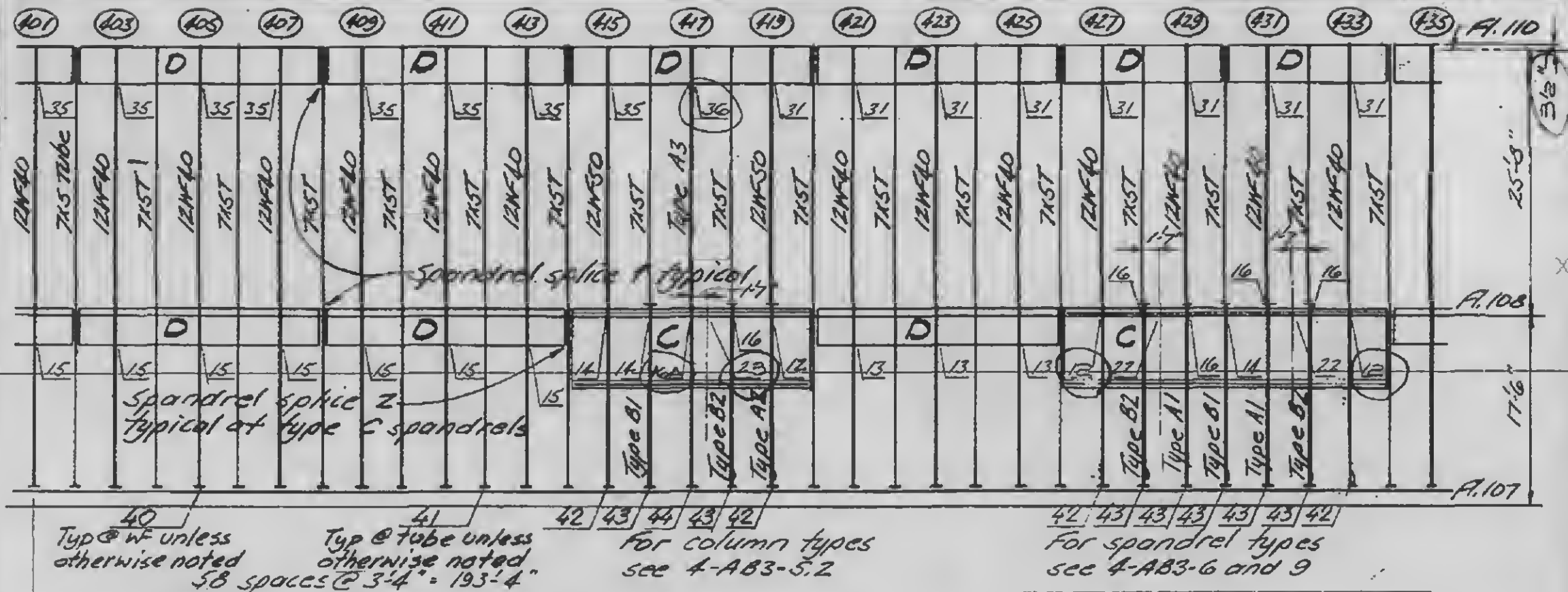
10-23-69

12-15-69

Conn d'tls added

2-26-70

3-16-70

For col base splice  
d'tls see 4-AB3-11For typical wall sections  
see 4-AB3-4For column connection  
details see 4-AB3-7.1, 7.2, 8

See 4-AB3-4

4-A3-2.4

PROJECT *THE WORLD TRADE CENTER*

TITLE EXT WALL - 107 TO 110 - COL & SPANDREL - SCH - TOWER B.

DATE 9-2-69

## REVISIONS

10-23-69

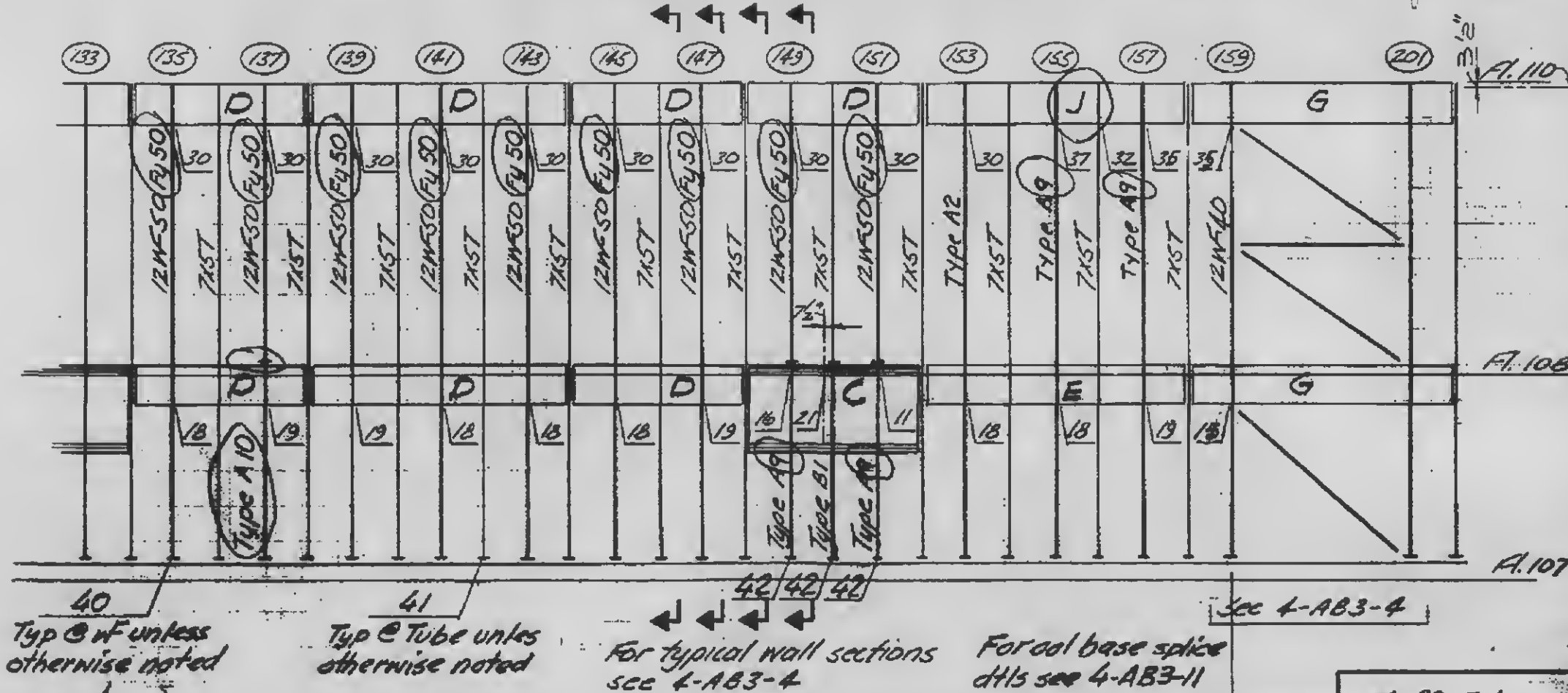
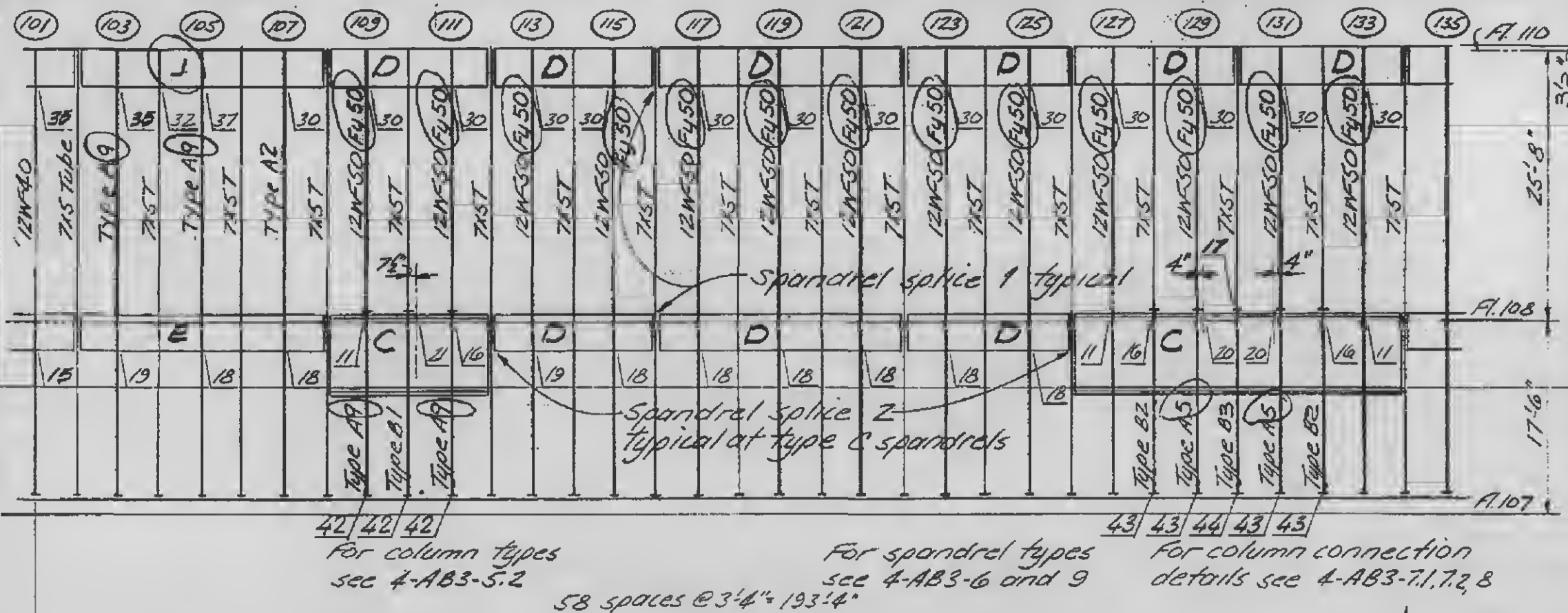
12-15-69

Conn dts added:

2-26-70

3-16-70

8 - 3 - 70



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**DRAWN**

REVIEWER

4-83-2.1



PROJECT

THE WORLD TRADE CENTER

TITLE

EXT WALL-107 TO 110-COL &amp; SPANDREL SCH-TOWER B

DATE

9-2-69

## REVISIONS

10-23-69

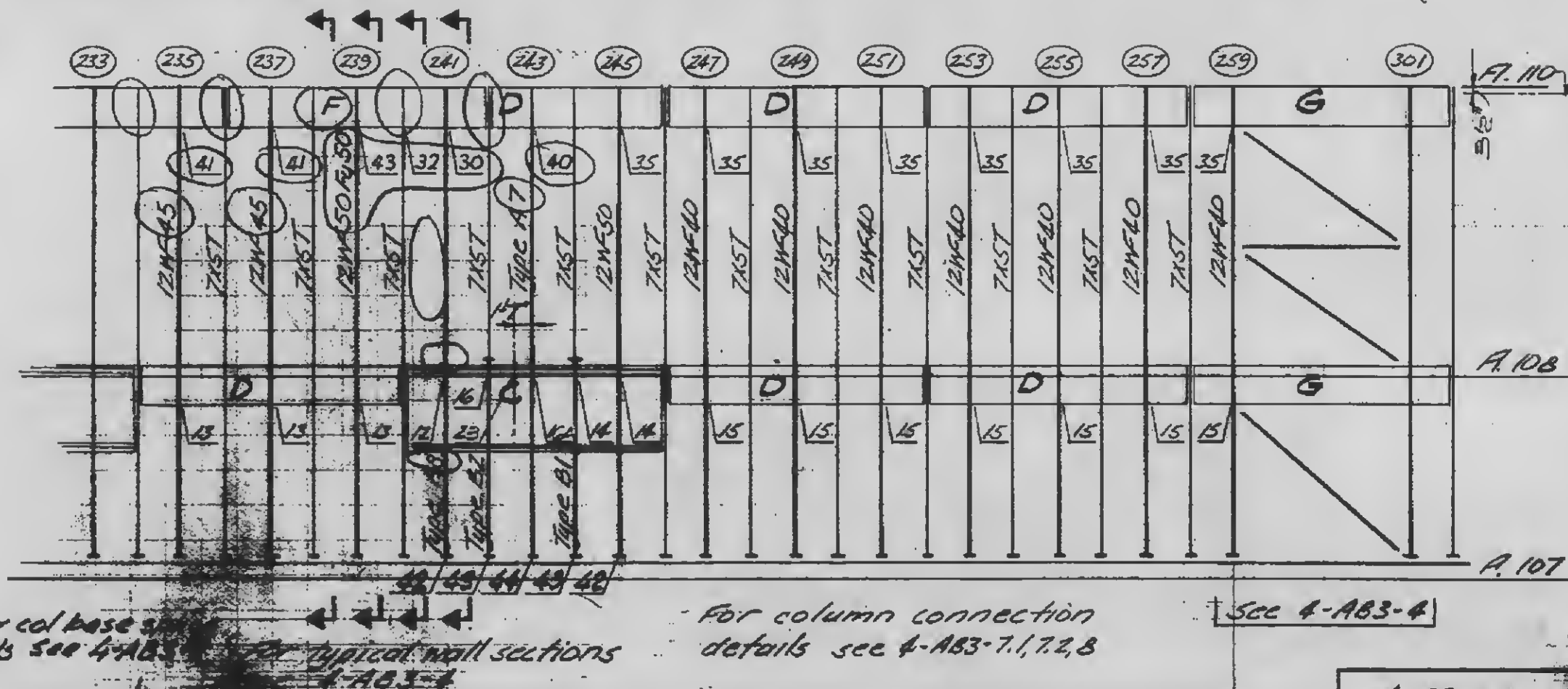
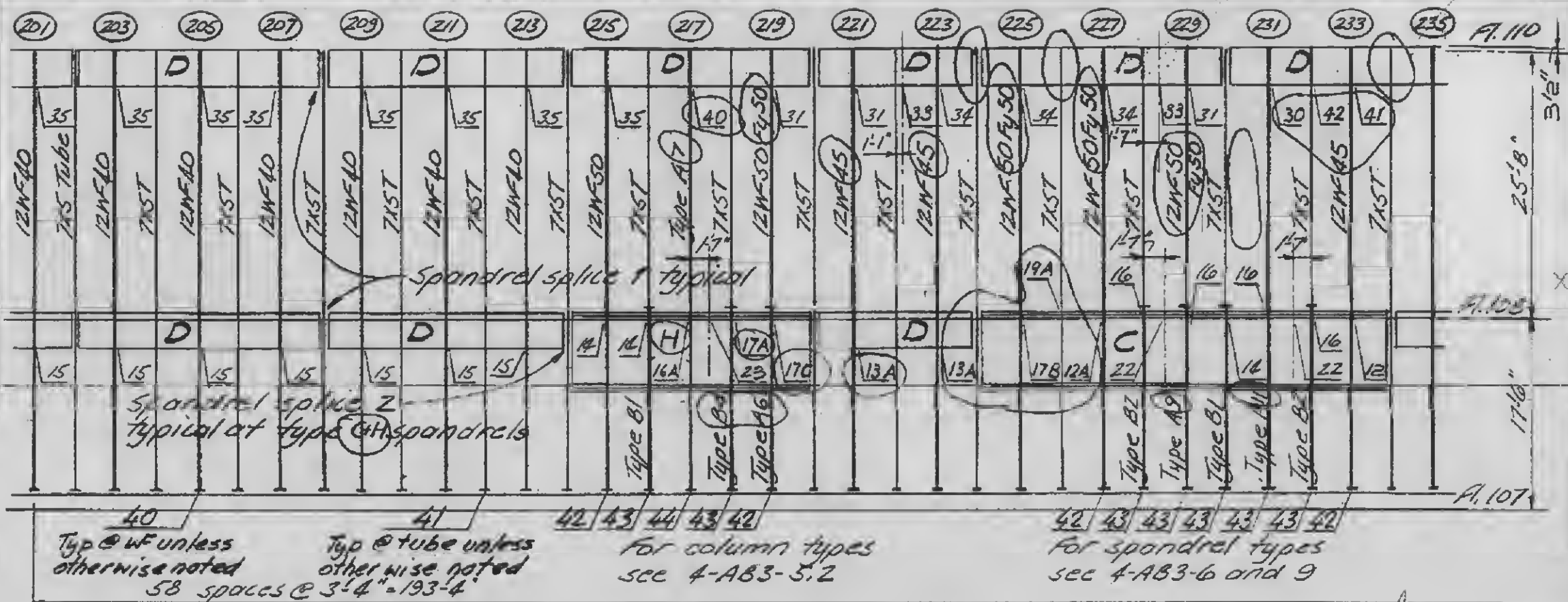
12-15-69

Conn d'tls added

2-26-70

3-16-70

8-3-70



DESIGNED

J.H.

DRAWN

J.A.

REVIEWED

J.H.B.

12/30

4-B3-2.2

PROJECT THE WORLD TRADE CENTER

TITLE EXT WALL - 107 TO 110 - COL &amp; SPANDREL SLH - TOWER B

DATE 9-2-69

## REVISIONS

10-23-69

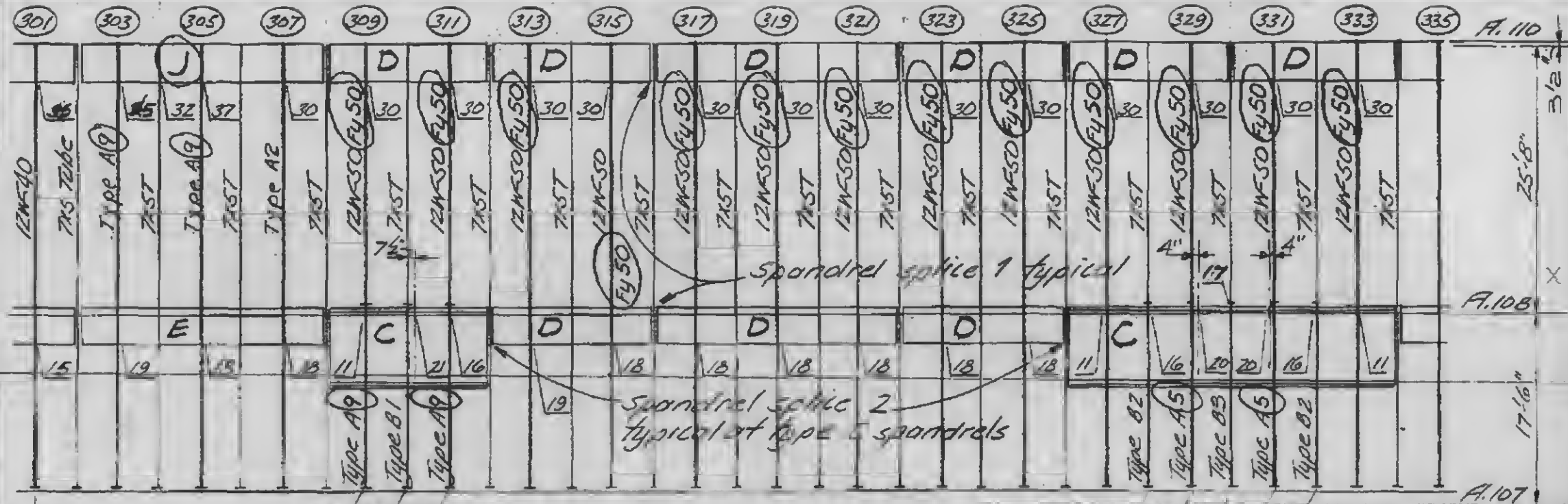
12-15-69

Conn dets added

2-26-70

3-16-70

8-3-70

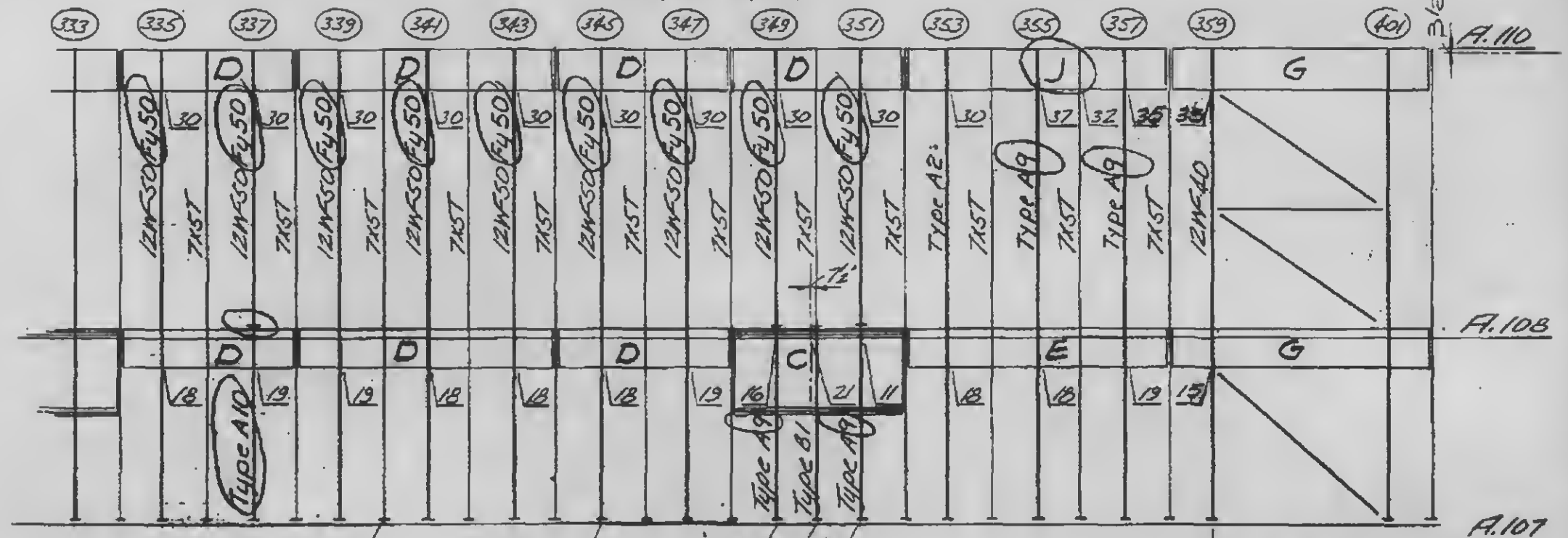


For column type  
see 4-AB3-5.2

For spandrel types  
see 4-AB3-6 and 9

For column connection  
details see 4-AB3-7.1, 7.2, 8

58 spaces @ 3'-4" = 193'-4"



For col base splice  
dets see 4-AB3-4

41  
Type @ tube unless  
otherwise noted

40  
Type WF unless  
otherwise noted

For typical wall sections  
see 4-AB3-4

See 4-AB3-4

4-AB3-2.3

DESIGNED

J.H.

DRAWN

J.A.

REVIEWED

WAB.

PROJECT THE WORLD TRADE CENTER

TITLE EXT WALL-10TTO.110-COL 4 SPANDREL SCH-TOWER B

DATE 9-2-69

## REVISIONS

10-23-69

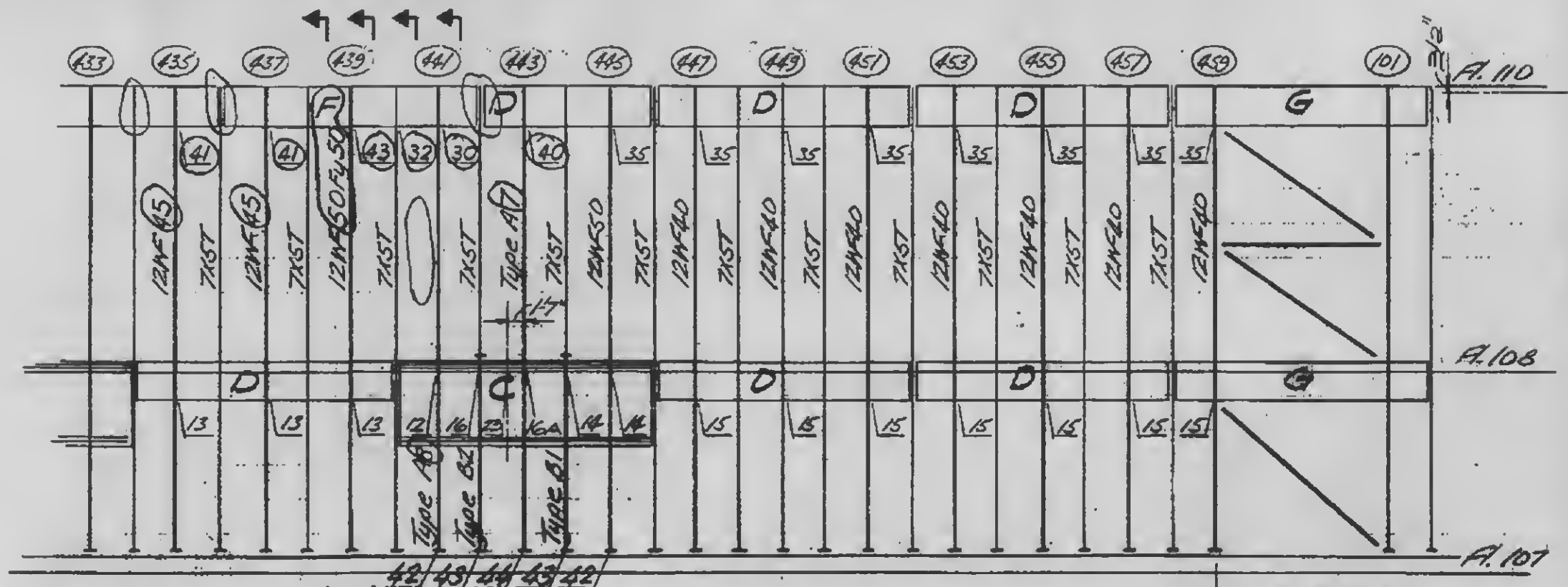
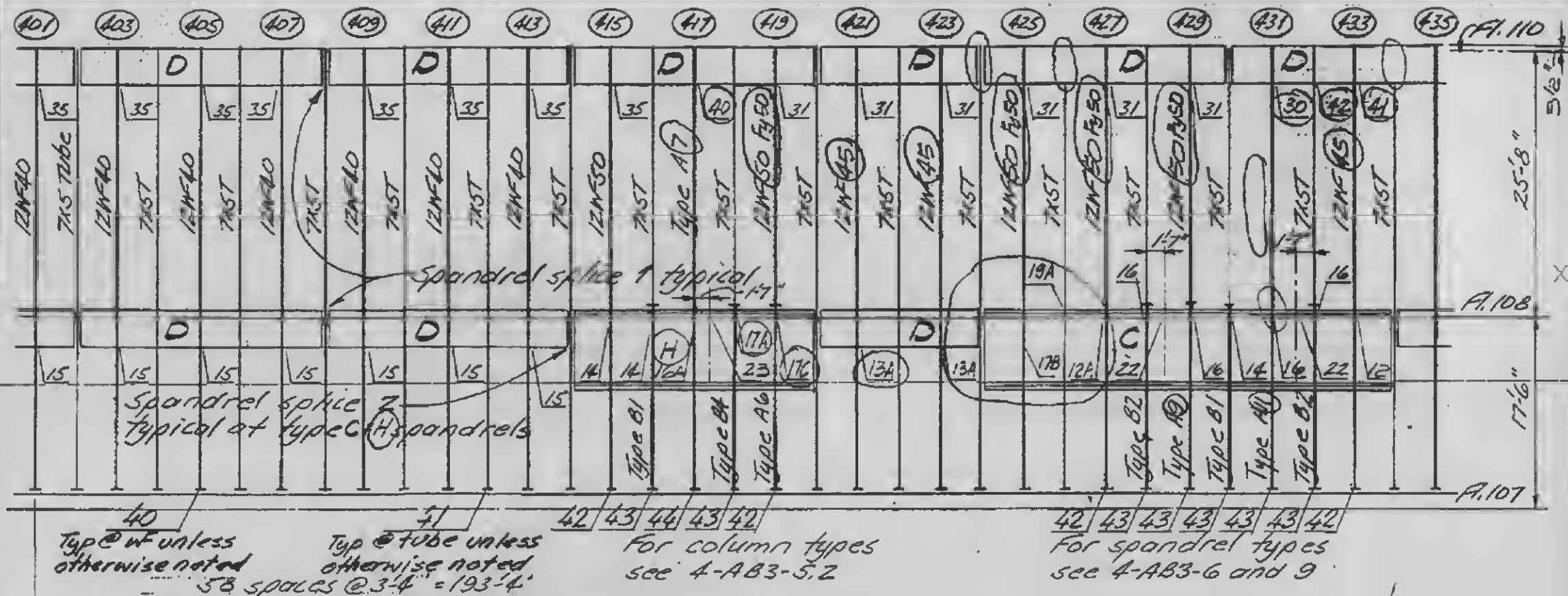
12-15-69

Conn d'tls added

2-26-70

3-16-70

8-3-70



DESIGNED

J.H.

DRAWN

J.H.

REVIEWED

W.B.

R 12/30

4-B3-2.4

PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL - 101 TO 110 - SPANDREL SPLICES

DATE

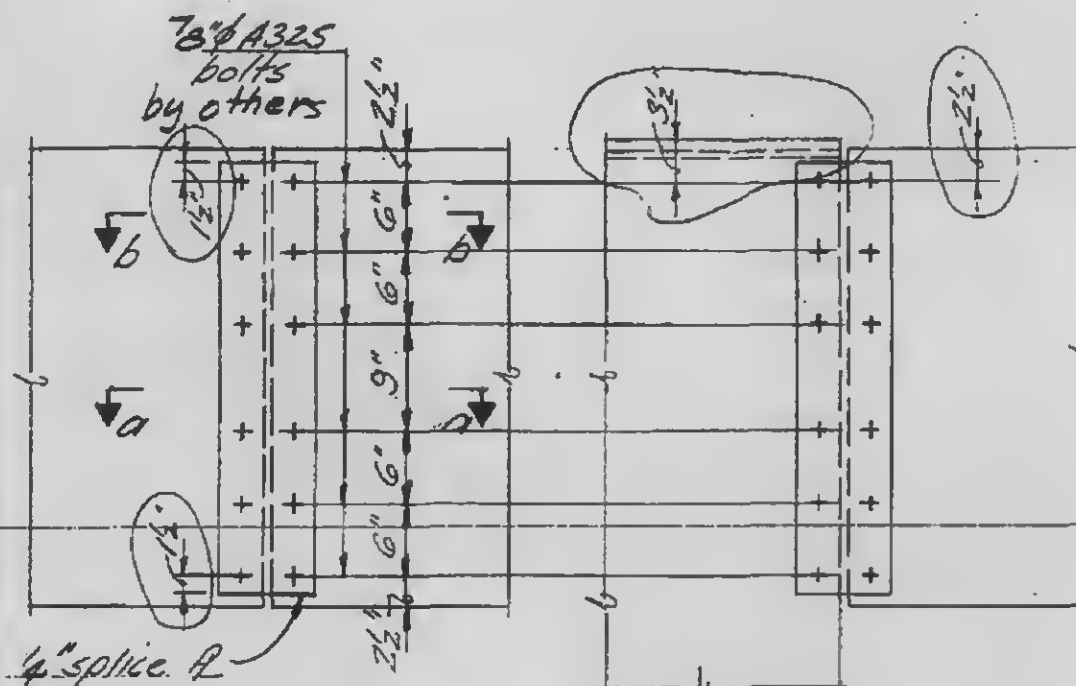
8-15-69

## REVISIONS

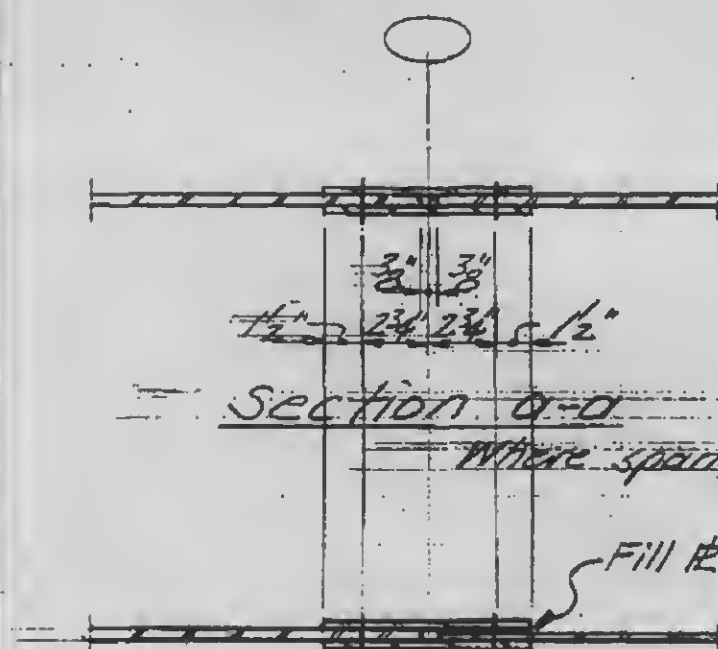
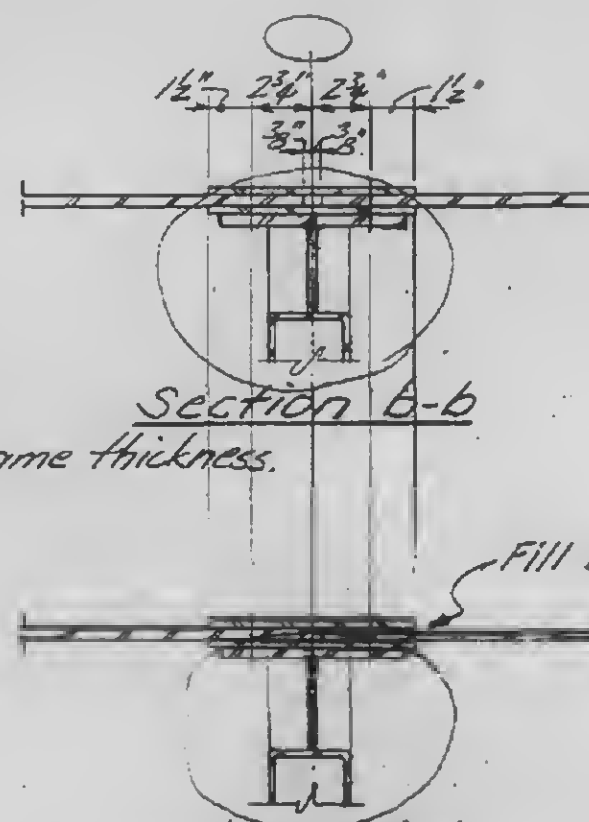
2-15-69

2-26-70

3-16-70

Splice 1Splice 2NOTES:

1. Holes in spandrel plates to be  $1\frac{1}{16}$ "  $\phi$
2. Holes in splice plates  $\frac{1}{16}$ " larger than bolt diameter.
3. Bolt heads on outside face.
4. Splice plates to be shipped attached to spandrel plates with 2 shipping bolts and shall not project beyond end of spandrel during shipping.

Section a-aWhere spandrels same thickness.Section b-bSection a-aWhere spandrel thickness varies.Section b-b

DESIGNED

DRAWN

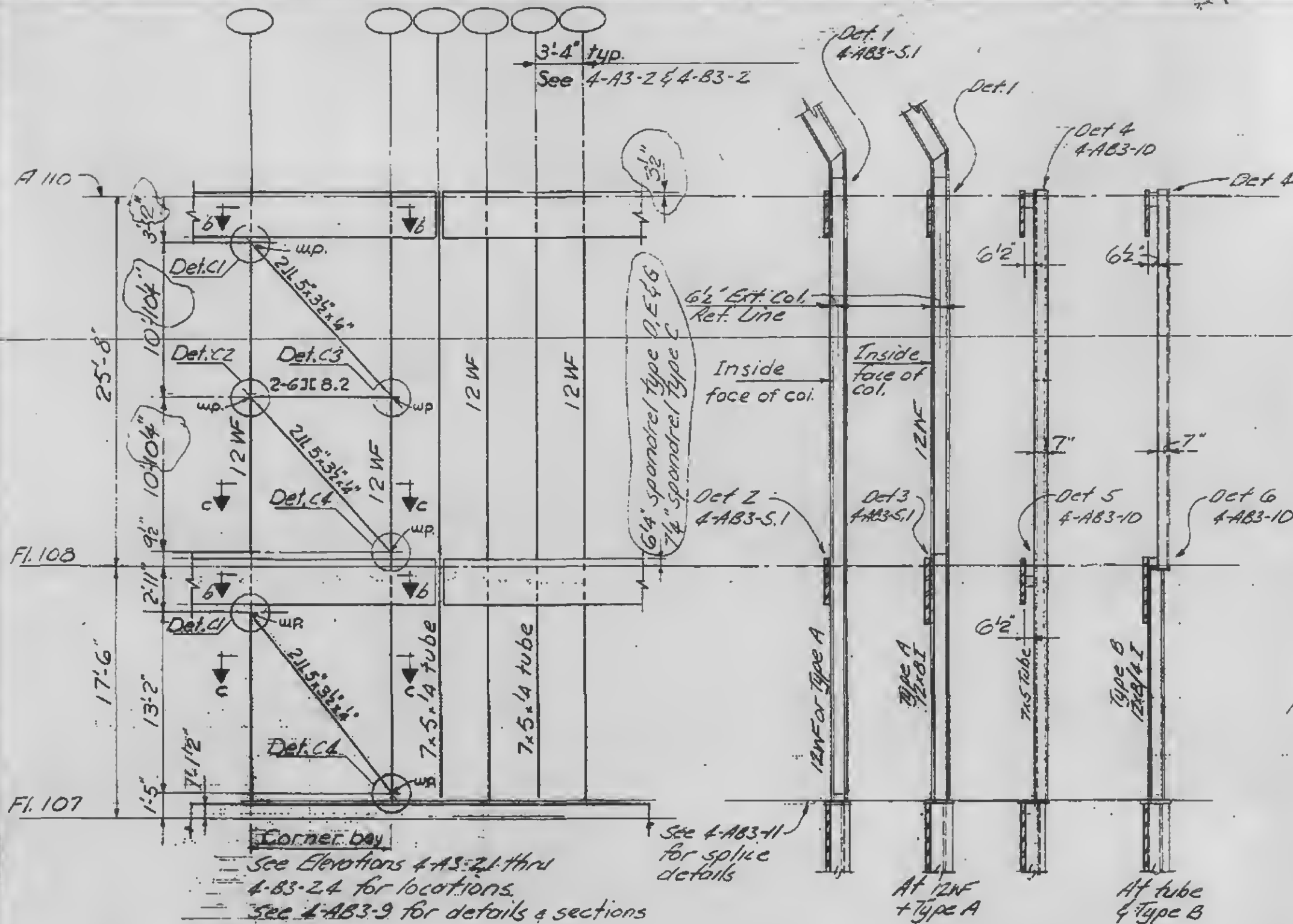
REVIEWED

4-AB3-3



REVISIONS

8/15/69  
12-15-69  
2-26-70  
3-16-70



Part elevation of ext. wall

Sections through ext. wall



## REVISIONS

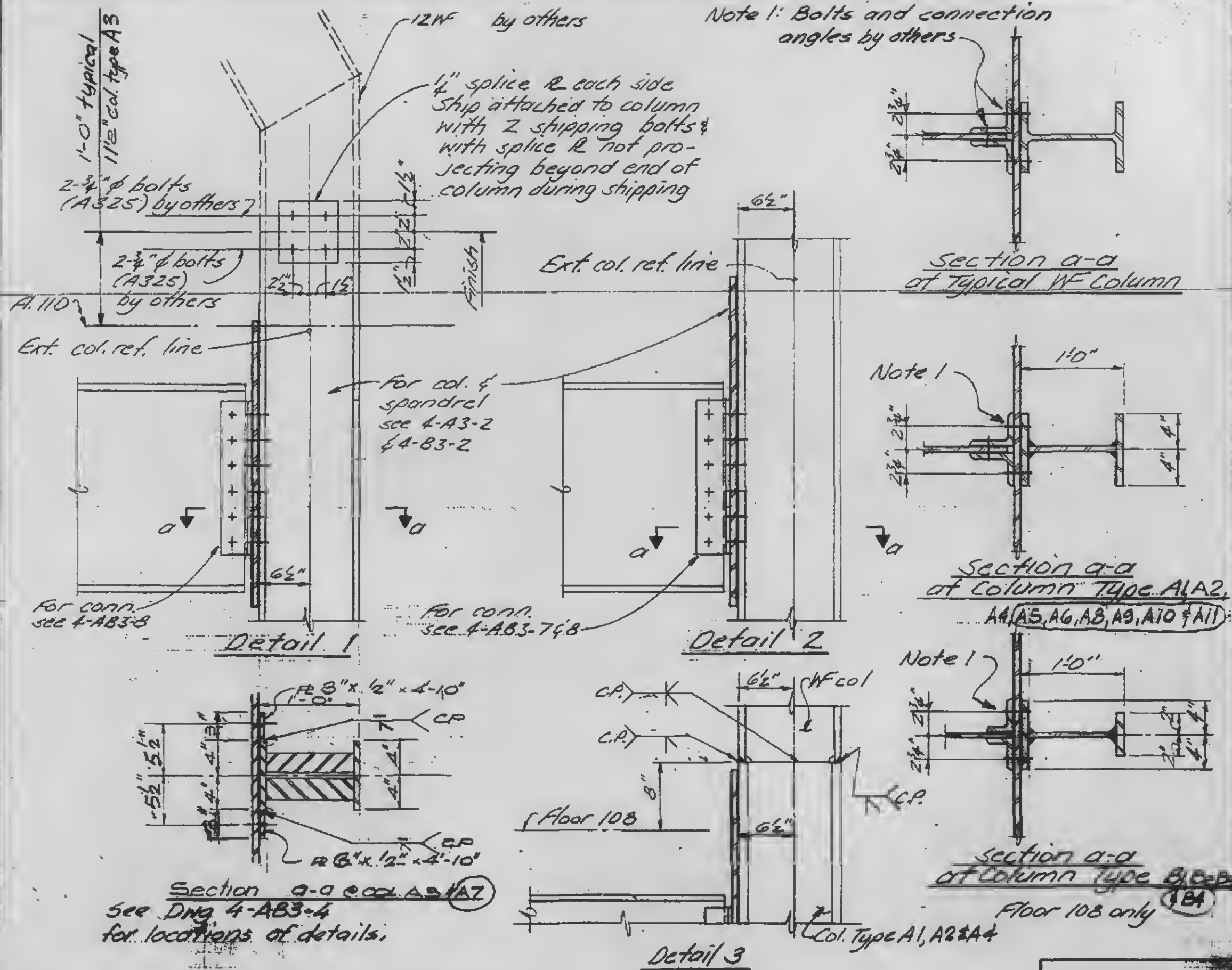
8-15-69

12-15-69

2-26-70

3-16-70

8-3-70



4-AB3-5.1



PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL-107 TO 110- COLUMN TYPES

DATE

8/15/69

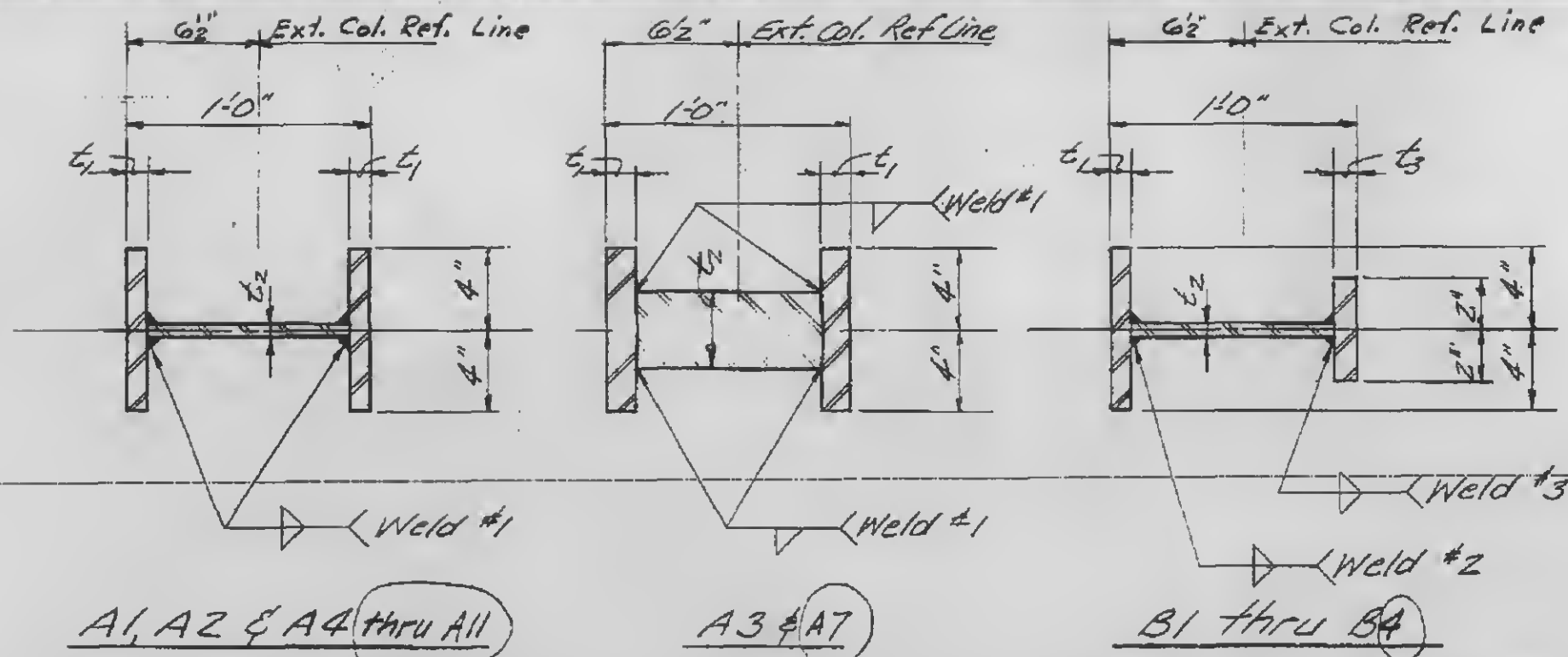
## REVISIONS

12-15-69

3-16-70

4-10-70

8-3-70R



Schedule Col. Type A

TOWER	Mark	t <sub>1</sub>	t <sub>2</sub>	Weld #1	F <sub>y</sub>
A & B	A1	1	1/2	5/16	42
A & B	A2	1/2	3/4	3/8	42
A	A3	1/2	3 1/2	1/2	50
A	A4	1	3/4	5/16	42
B	A5	1 1/4	3/4	5/16	42
B	A6	1 3/4	3/4	3/8	42
B	A7	1 3/4	3 1/2	1/2	50
B	A8	2	3/4	3/8	42
B	A9	1 1/4	1/2	5/16	42
B	A10	1 1/4	3/8	5/16	42
B	A11	1 1/2	1/2	3/8	42

Column Type A

Schedule Column Type B

TOWER	Mark	t <sub>1</sub>	t <sub>2</sub>	t <sub>3</sub>	F <sub>y</sub>	Weld #2	Weld #3
A & B	B1	1	1/2	1	42	5/16	5/16
A & B	B2	1 1/2	3/4	1 1/2	42	3/8	3/8
A & B	B3	1/2	3/4	1 1/2	50	3/8	3/8
B	B4	1 3/4	3/4	1 3/4	50	3/8	3/8

Column Type B

See Dwg 4-A3-2.1 thru 4-A3-2.4 and  
4-B3-2.1 thru 4-B3-2.4 for locations.  
See Dwg 4-AB3-1 for Index & Gen Notes.

DESIGNED

DRAWN

J. A.

REVIEWED

W. A. B.

4-AB3-5.2

PROJECT

THE WORLD TRADE CENTER

TITLE

EXTERIOR WALL -107 TO 110- SPANDREL TYPES

DATE

4-12-67

## REVISIONS

8/15/69

12/15/69

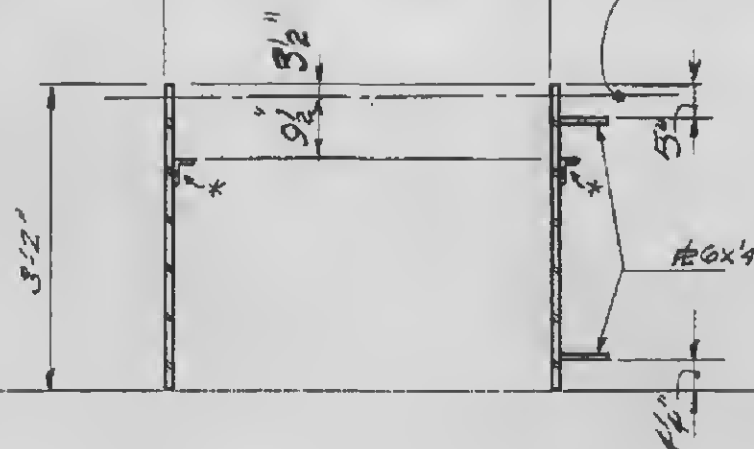
3/16/70

4/10/70

8/3/70

Exterior  
faceExterior  
face

Floor 110

See DWG 4-AB3-9  
for welding details

## SPANDREL SCHEDULE

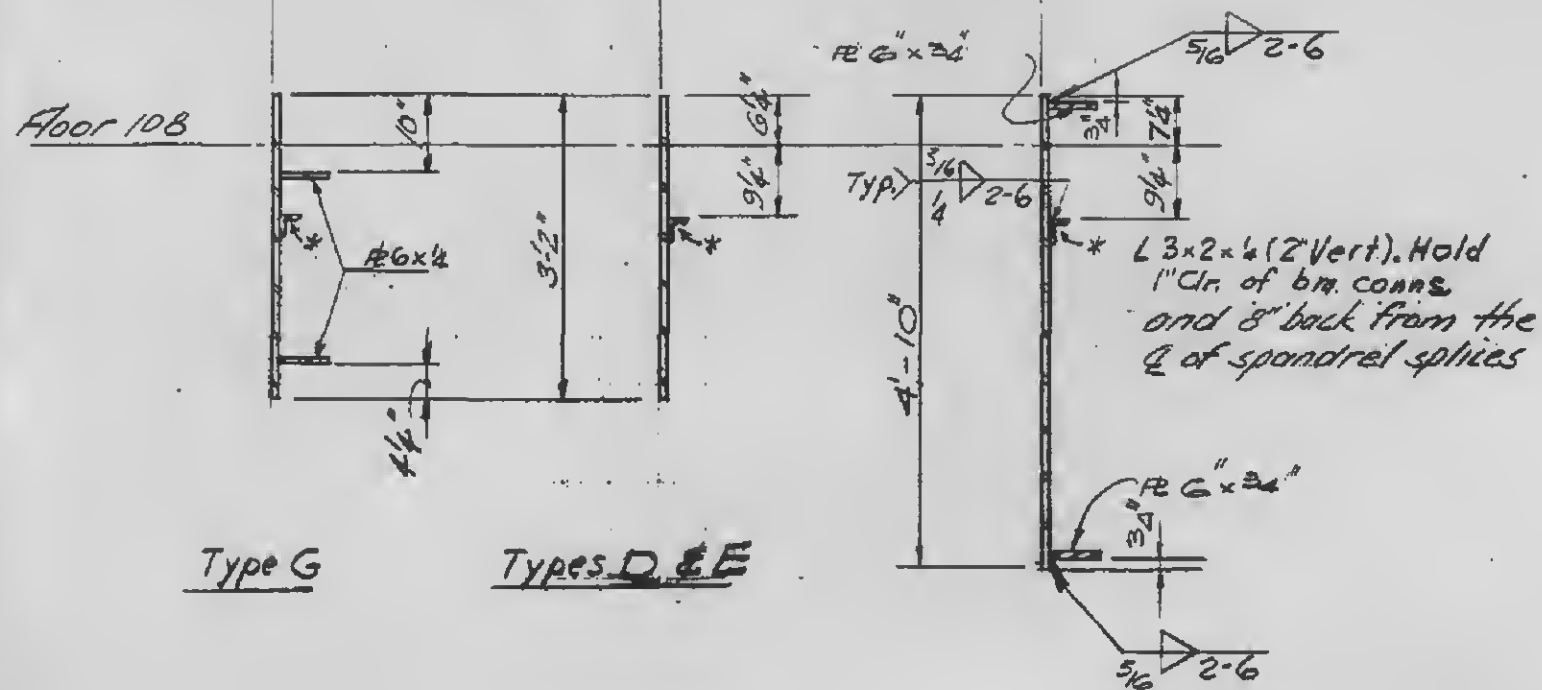
Type	Depth	Thick	Fy	Remarks
C	4'-10"	34	36	
D	3'-2"	38	36	
E	3'-2"	12	36	
F	3'-2"	78	36	
G	3'-2"	38	36	Corner spandrel see 4-AB3-9
H	4'-10"	78	36	
J	3'-2"	1	36	

Types D, F &amp; J

Type G

Exterior  
faceExterior  
faceExterior  
face

Floor 108



Type G

Types D &amp; E

Type C &amp; H

DESIGNED

DRAWN

REVIEWED

D 12/20

4-AB3-6

## REVISIONS

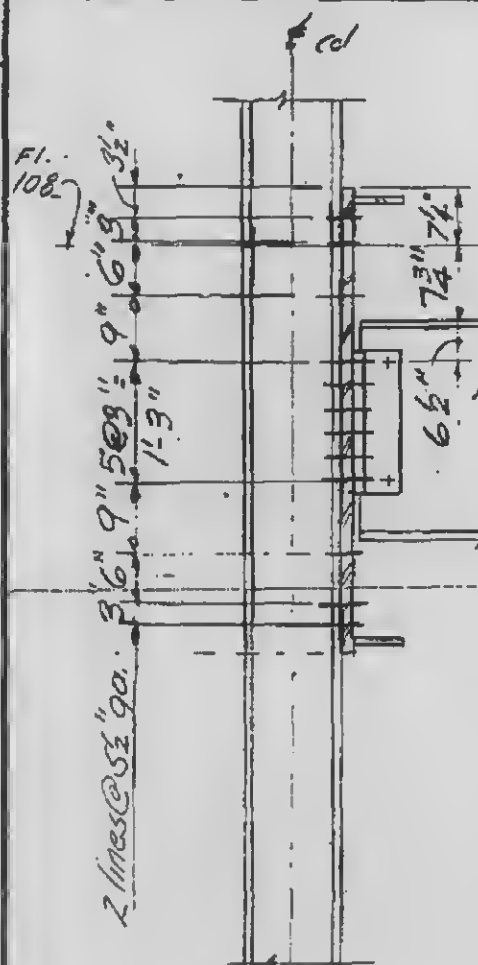
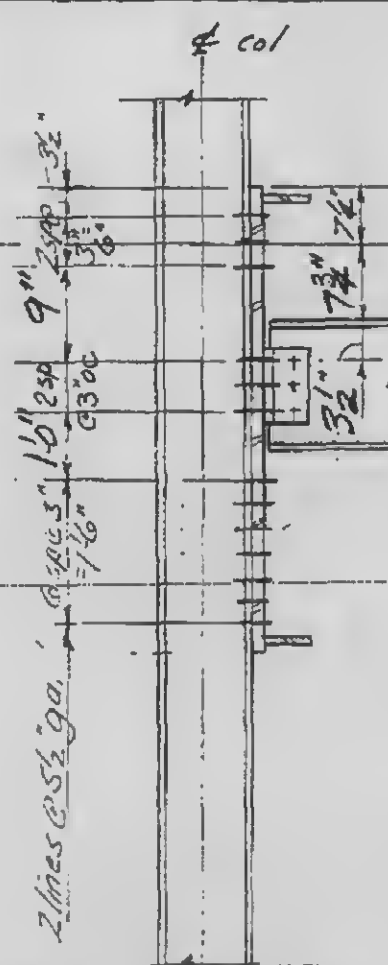
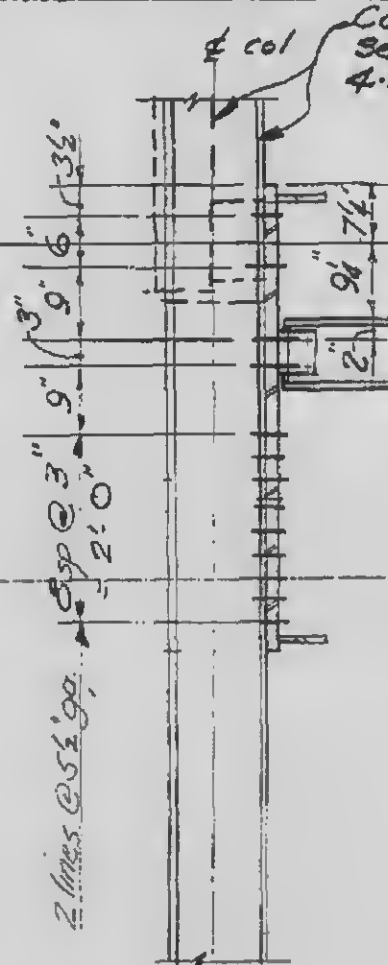
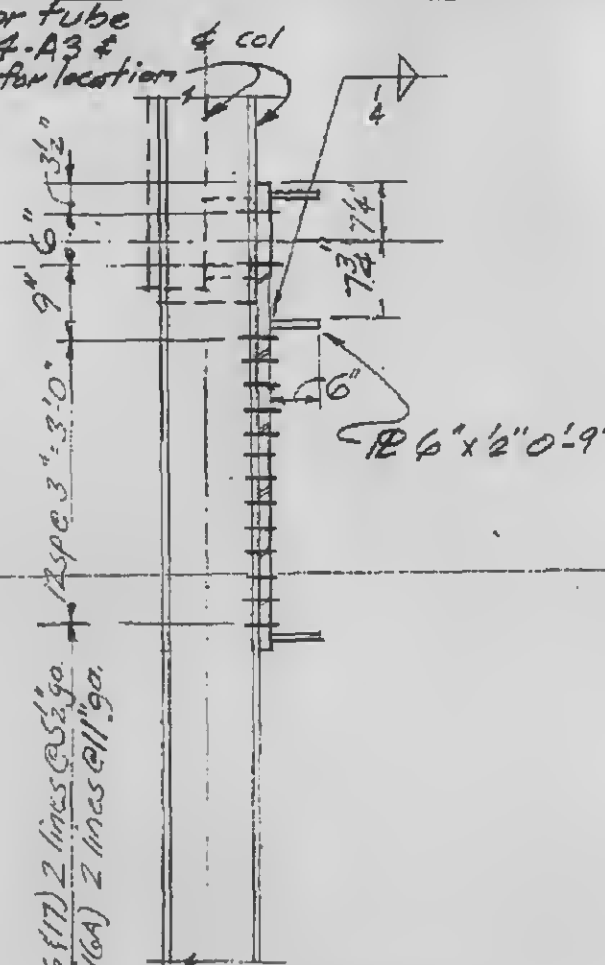
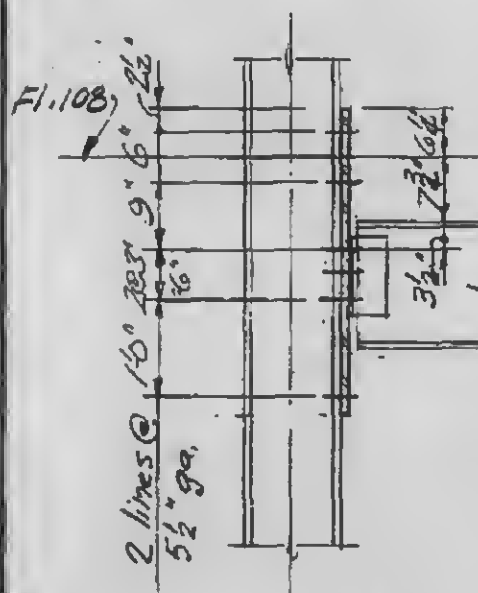
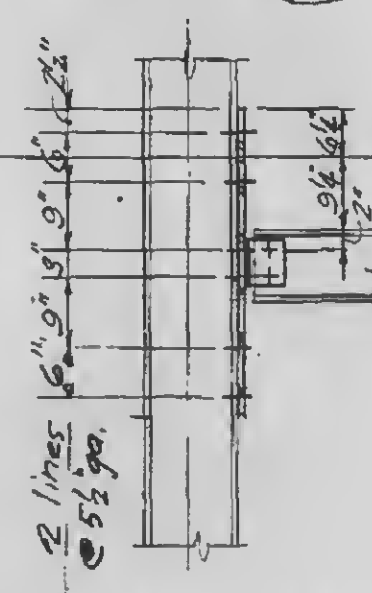
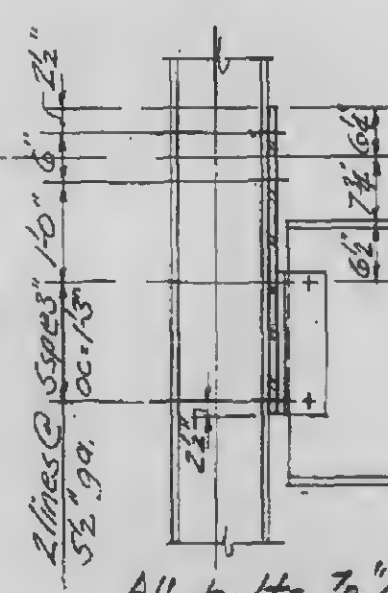
12-15-69

2-26-70

3-16-70

4-27-70

8-3-70

All bolts 7/8"  $\phi$ DETAIL 11Det. 12A All bolts 1"  $\phi$ Det. 12 All bolts 7/8"  $\phi$ DETAIL 12 & 12AAll bolts 7/8"  $\phi$ DETAIL 14All bolts 7/8"  $\phi$  (16 & 17)  
All bolts 1"  $\phi$  (16A)DETAILS 16, 16A & 17All bolts 7/8"  $\phi$ DETAIL 13All bolts 7/8"  $\phi$ DETAIL 15All bolts 7/8"  $\phi$  (18)All bolts 1"  $\phi$  (19)DETAILS 18 & 19Notes:

1. Bolts, connection angles and beams by others.
2. All holes in spandrels to be 1 1/8"  $\phi$ .  
All holes in column, connection angles and beams to be 1/8" larger than bolt diameter.
3. All bolts A325 or A490. See Drawing Book 9.

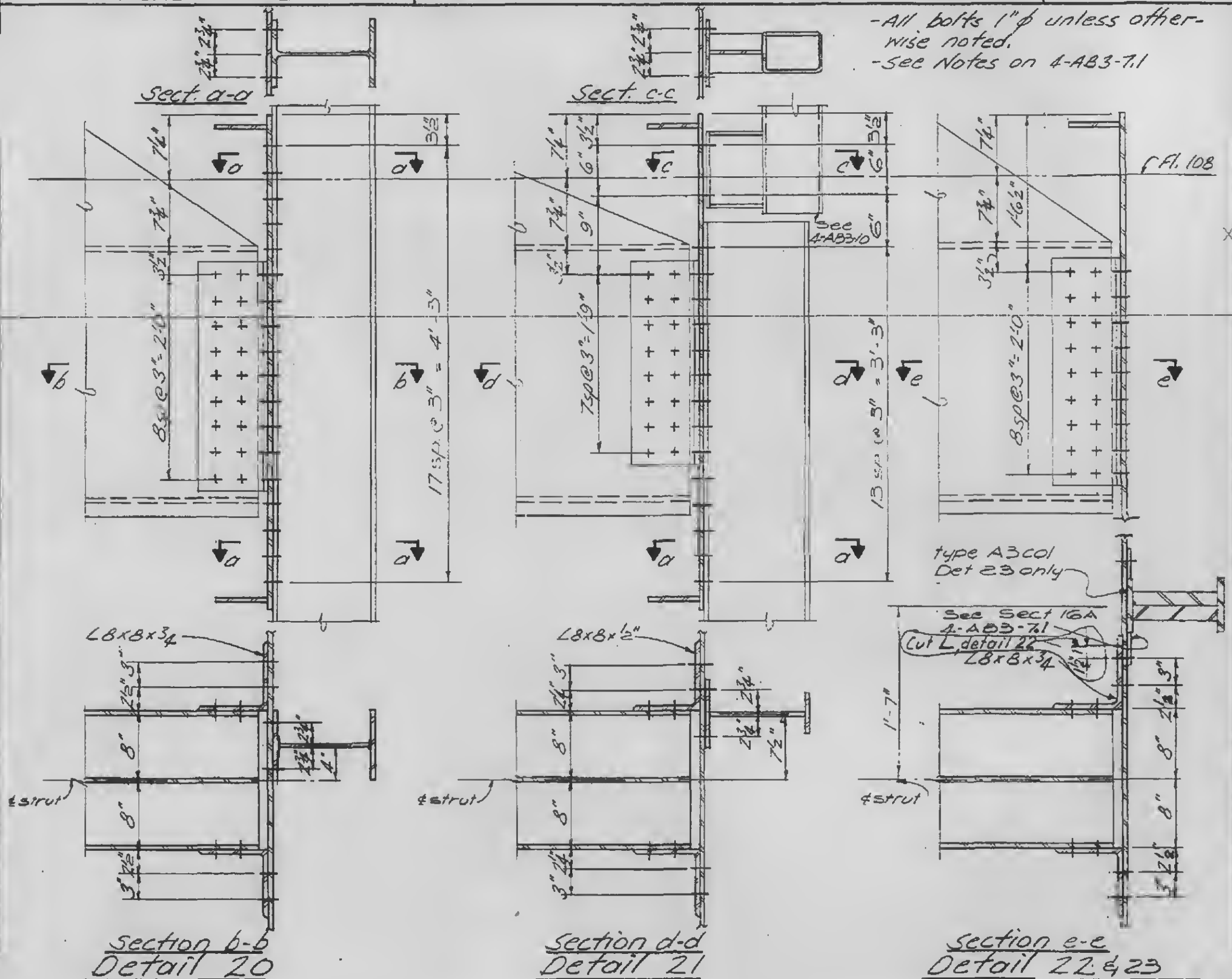
PROJECT THE WORLD TRADE CENTERTITLE EXTERIOR WALL CONNECTIONS - FLOOR 108

DATE

## REVISIONS

2-26-70  
3-16-70  
4-27-70

-All bolts 1"  $\phi$  unless other-  
wise noted.  
-See Notes on 4-AB3-7.1



Section b-b  
Detail 20

Section d-d  
Detail 21

Section e-e  
Detail 22 & 23

4-AB3-7.2



DESIGNED

DRAWN

REVIEWED

PROJECT

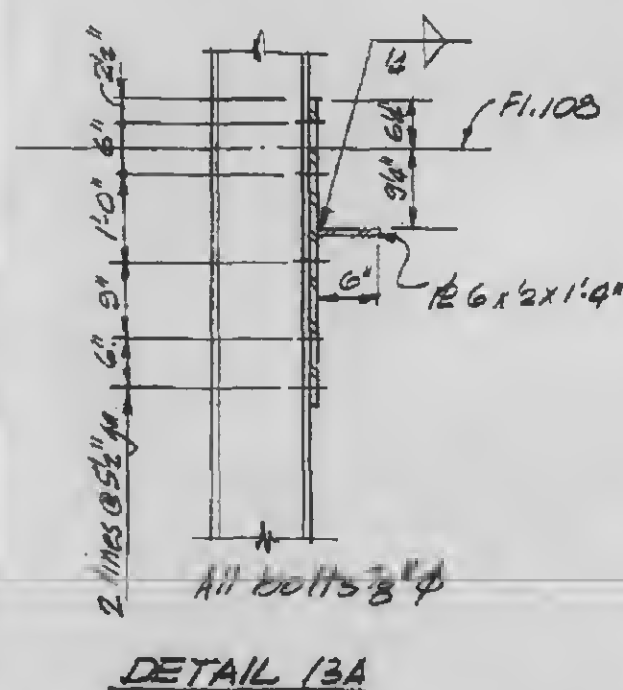
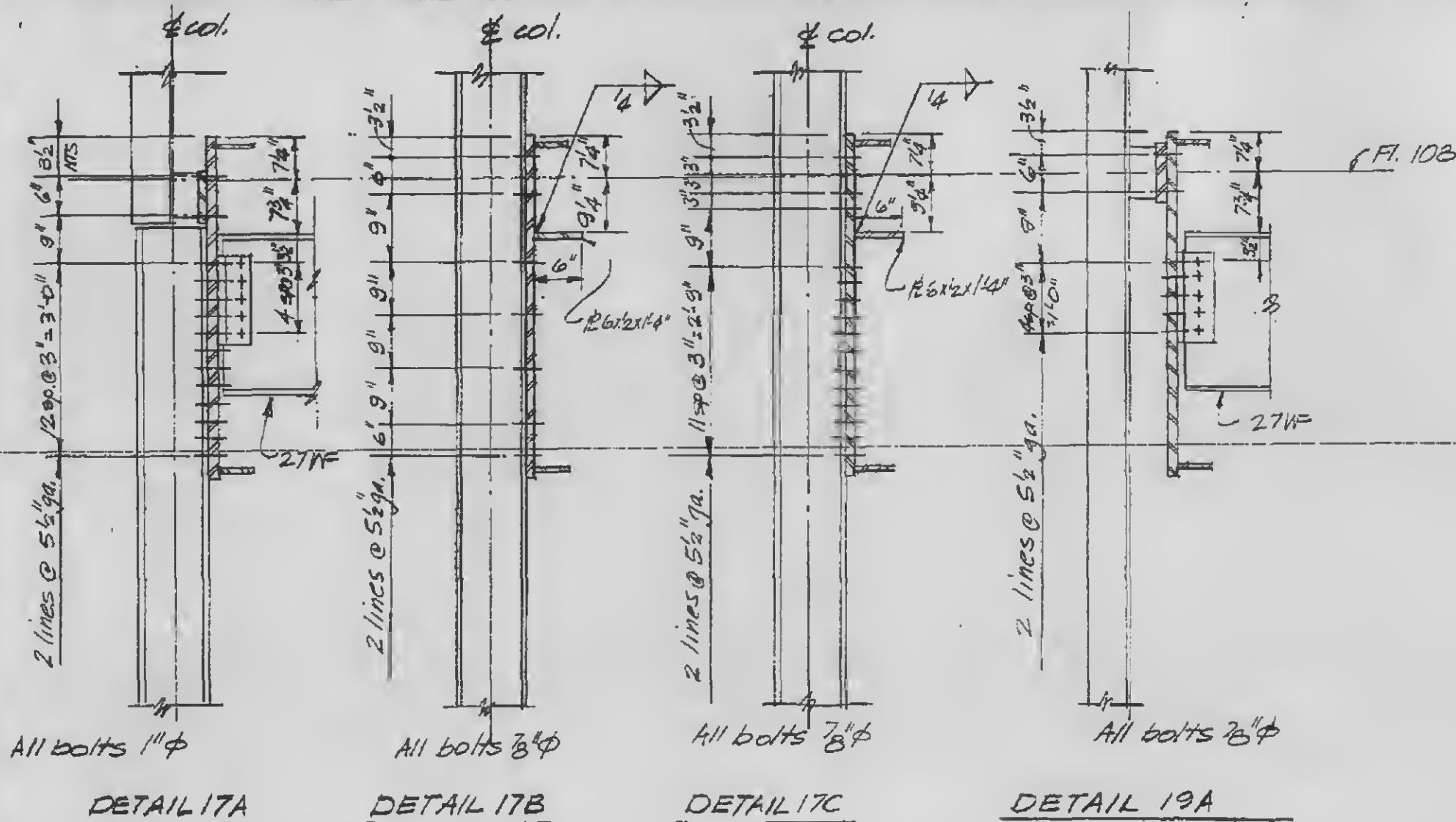
THE WORLD TRADE CENTER

**TITLE**

EXTERIOR WALL CONNECTIONS- FLOOR 108

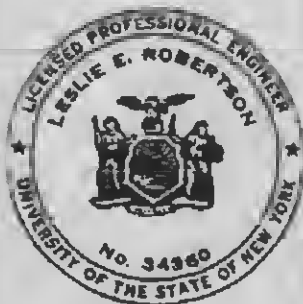
DATE 8-3-70

## REVISIONS



Notes:

1. Bolts, connection angles and beams by others.
2. All holes in spandrels to be  $1\frac{1}{16}" \phi$   
All holes in column, connection angles and beams to be  $1\frac{1}{16}"$  larger than bolt diameter.
3. All bolts A325 or A490. See Drawing Book 9.



DESIGNING B

**RAWN**

DRAWN  
P. Ozeki

REVIEWED

4-AB3-7.3

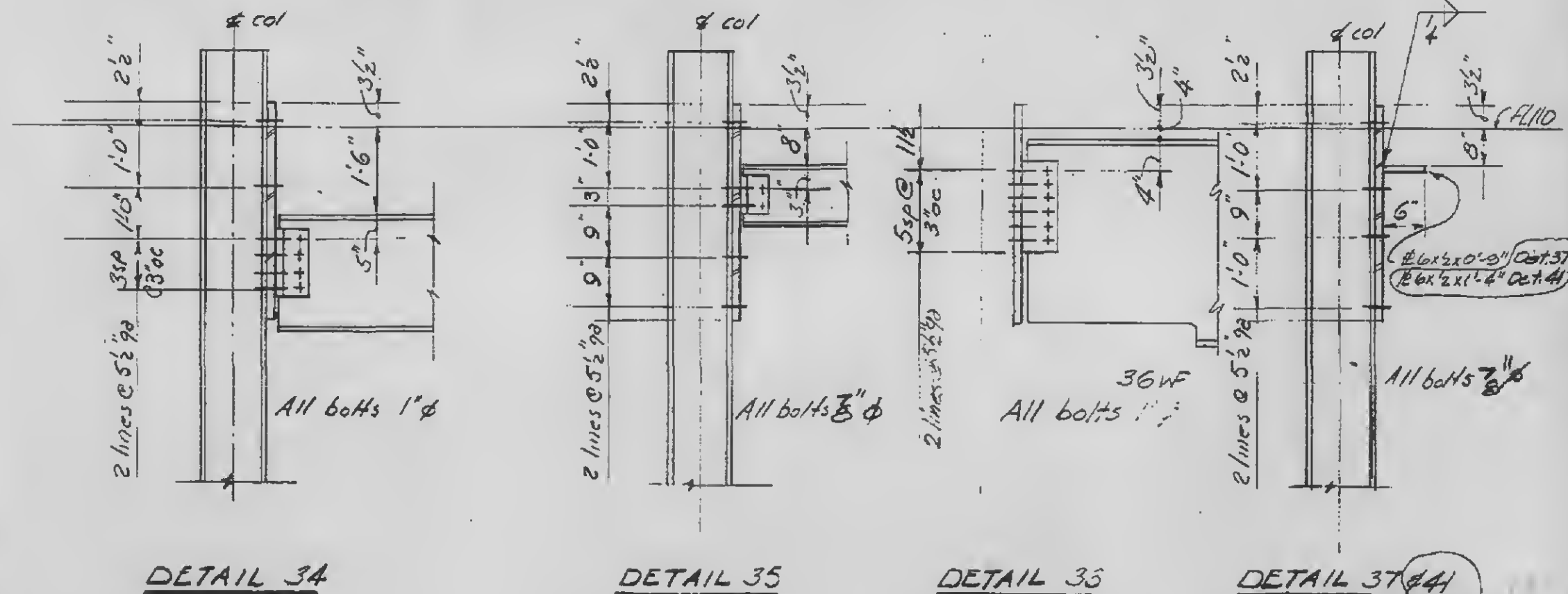
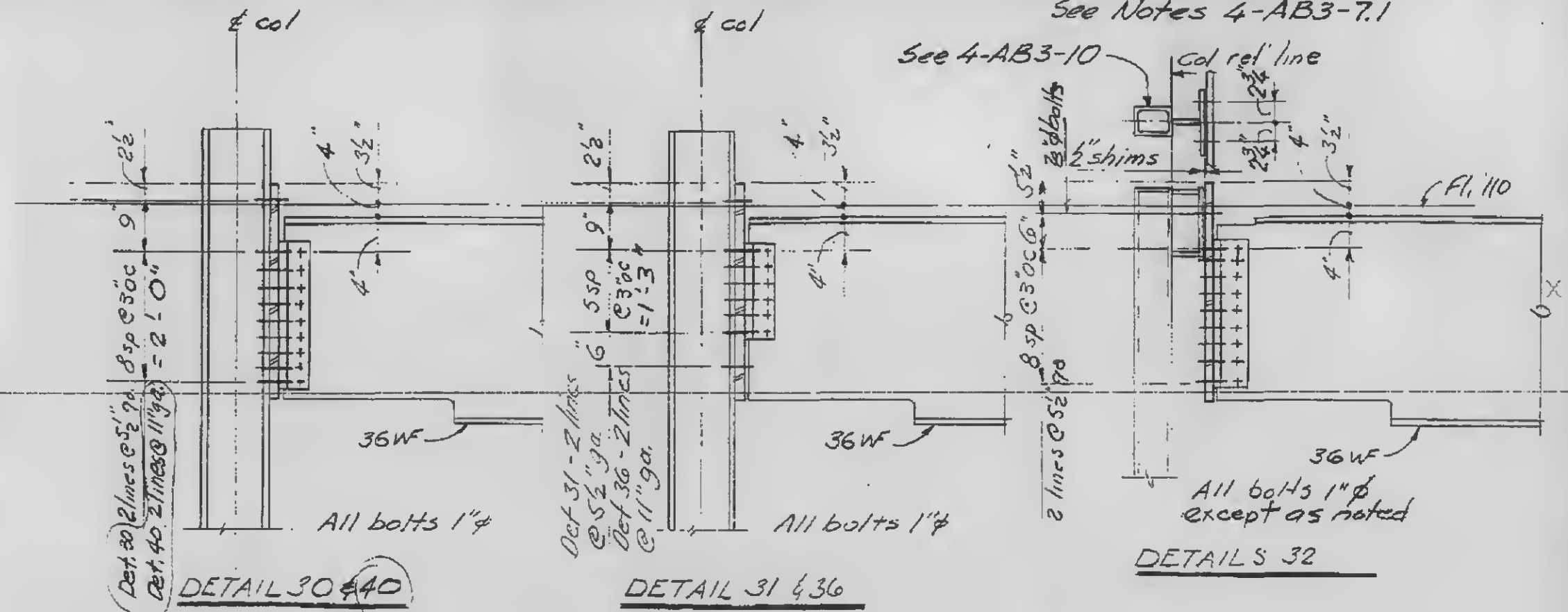
## REVISIONS

12/15/69

2-26-70

3-16-70

8-3-70



DESIGNED

**DRAWN**

REVIEWED

4-AB3-81)

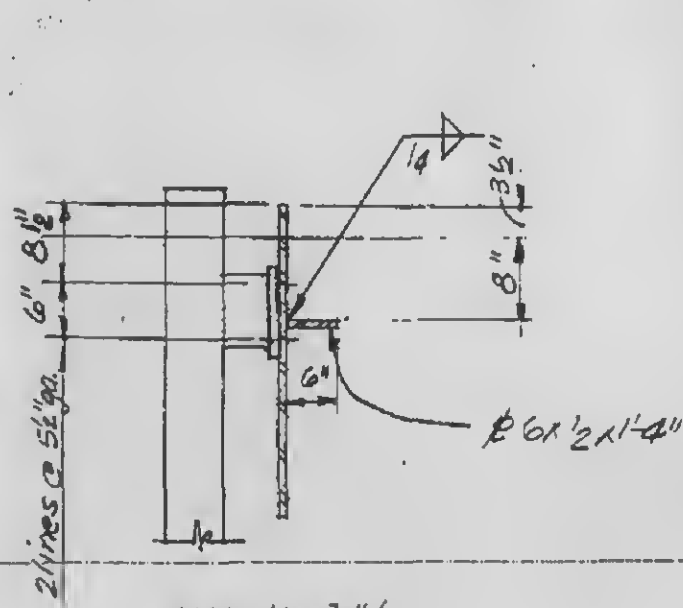


PROJECT THE WORLD TRADE CENTER

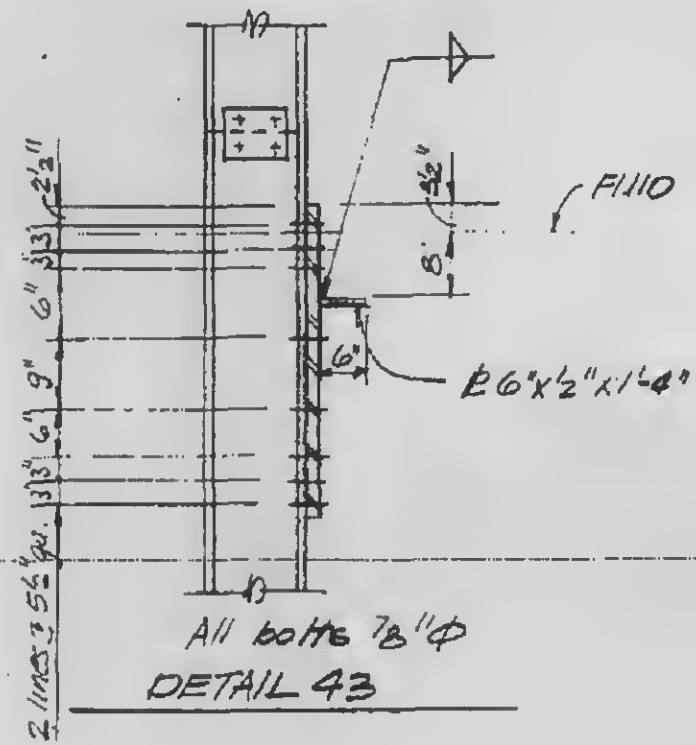
TITLE EXTERIOR WALL CONNECTIONS - FLOOR 110

DATE 8-3-70

REVISIONS



All bolts 3/8"φ  
DETAIL 42



All bolts 3/8"φ  
DETAIL 43



SIGNED

DRAWN

REVIEWED

4-AB3-B.2

WORTHINGTON, SKILLING, HELLE & JACKSON

Civil & Structural Engineers

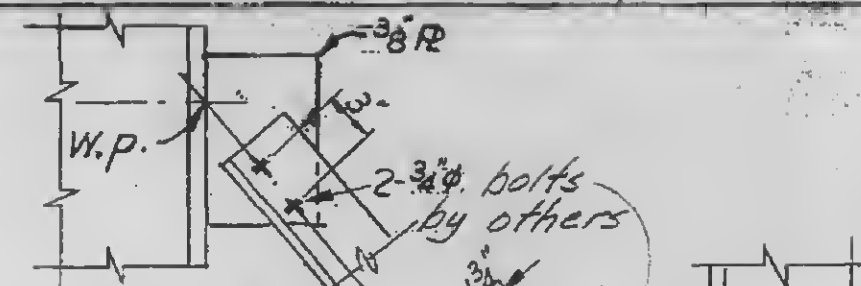
PROJECT **THE WORLD TRADE CENTER**

TITLE **EXTERIOR WALL - 107 to 110 - CORNER DETAILS**

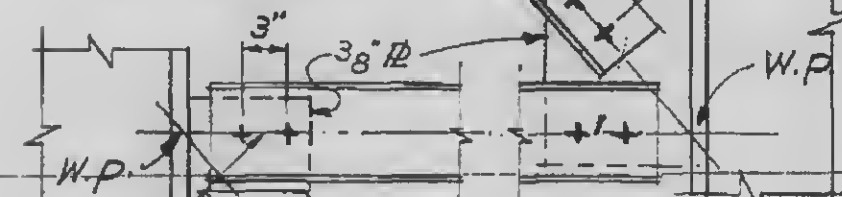
DATE **4-12-67**

REVISIONS

8-15-69  
12-15-69  
2-26-70  
4-10-70

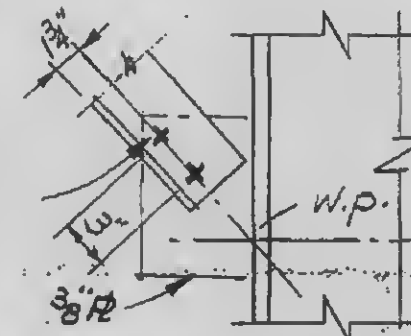


Detail C1



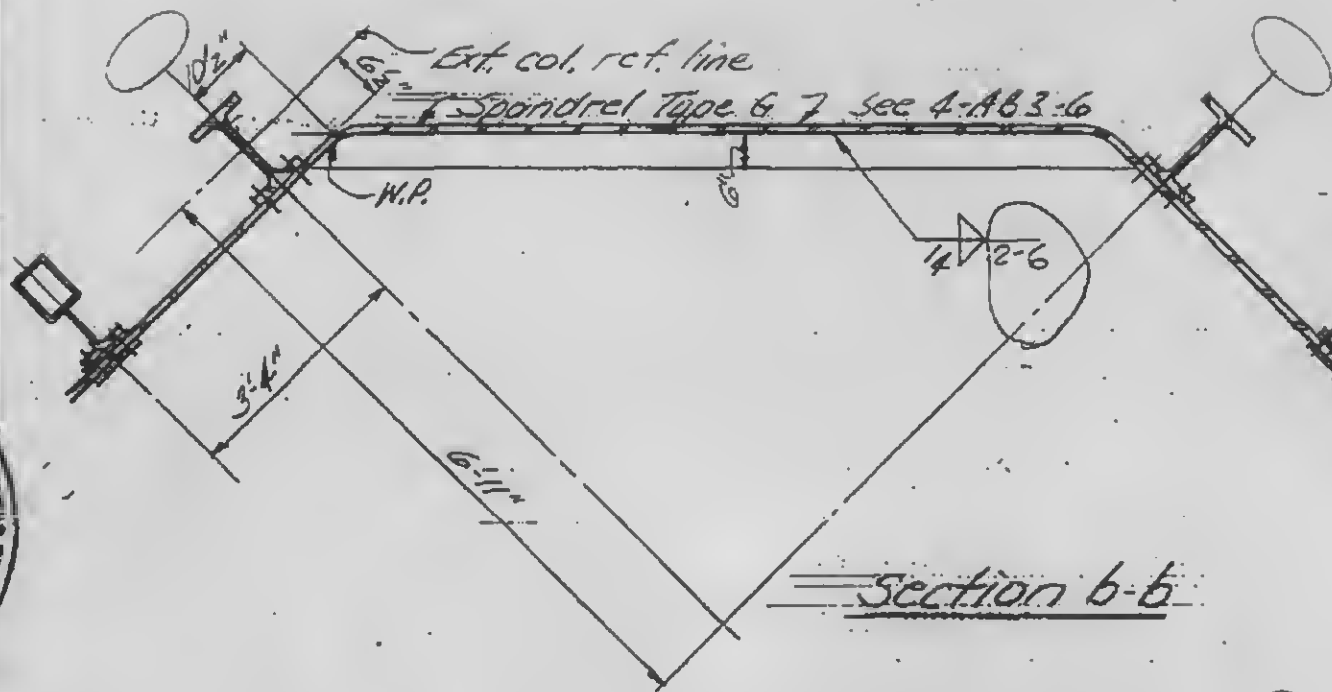
Detail C2

2-3/4" bolts  
by others



Detail C3

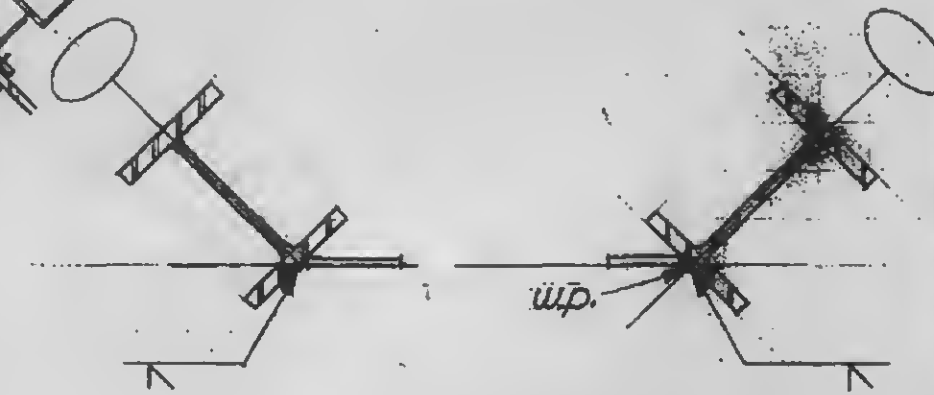
Detail C4



Section b-b



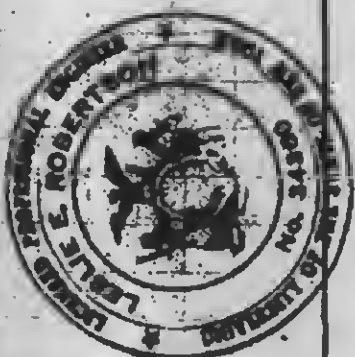
Section c-c



PLAN OF GUSSET PLATE AT COLS.

See DWG 4-AB3-4 for typical  
Elevation and member sizes & dth location

**4-AB3-9**



DESIGNED  
DRAWN  
CHECKED  
W.A.B.